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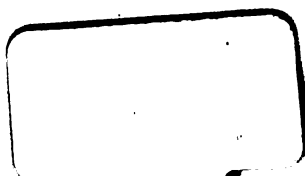
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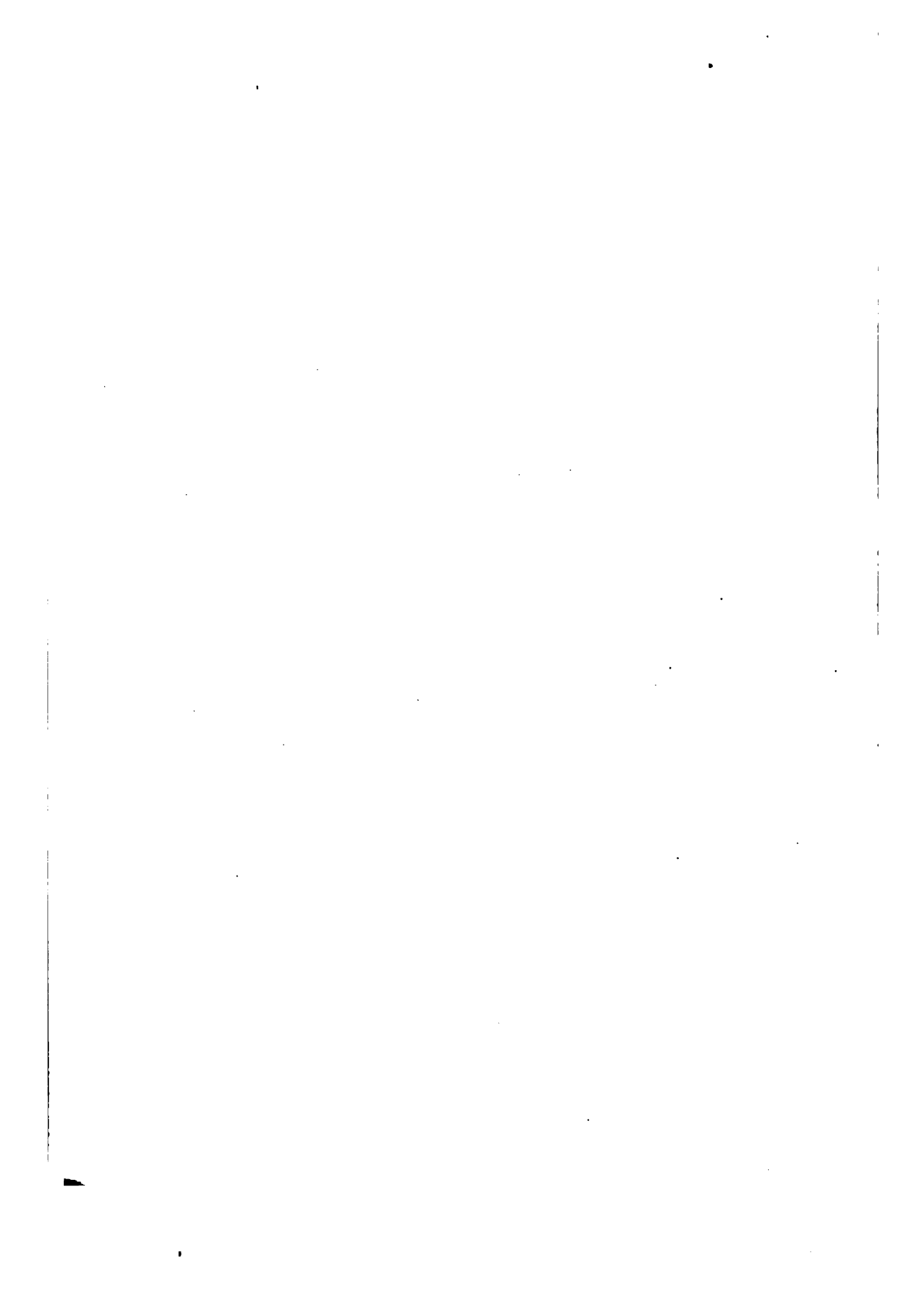
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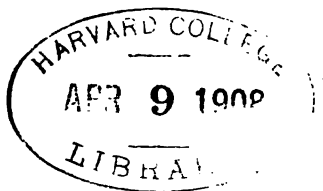
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ANNUAL
FOR
1907

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TO THE USER

WITH this volume of THE ENGINEERING INDEX—the sixth since the work was first undertaken and the second since it assumed the “Annual” form—a continuous index to the engineering and technical literature of the past twenty-four years is made available to the reader. And in this book, as in the volume issued last year, the “classified” system of arranging the items is followed in place of the “strict alphabetic” order of the earlier volumes. In other words, the articles indexed are first grouped under the great divisions of engineering practice to which they belong—Civil, Mechanical, Electrical, Mining, etc.—and under these again they are sub-grouped according to the recognized special divisions of each field. After these two steps have been taken in sorting the miscellaneous literature of the day into closely related sections, the final arrangement under each section becomes strictly alphabetical.

This plan has always been followed in the monthly instalments of THE ENGINEERING INDEX as they have appeared in THE ENGINEERING MAGAZINE, and it has found wide favor with the Magazine’s readers. Experience with the 1906 ENGINEERING INDEX ANNUAL proved that it was equally acceptable to the consultants of the volume. In the 1907 ANNUAL now presented, however, much additional care has been taken to serve the convenience of the users of the book. Thought and labor have been freely expended in the work of assembling the many thousand items so that articles on the same subject, though appearing at different times and in different periodicals, shall fall together as near as possible in the columns of the ANNUAL. The classifications have been somewhat amplified and made more distinct. Cross references have been most freely used so that the searcher for any subject may find a sign post leading him direct to his goal, on every path he is at all likely to try; and the typography of these cross-reference notes has been devised so that they may be most quickly understood.

The chief purpose of the “classified” plan of indexing is to collate, for each specialist, the entire current literature of his subject and to assemble it in a small space where it may be readily found and completely explored. The railway superintendent of motive power, for example, who wants to keep in touch with the latest work done in his department, does not have to plod through all railroad literature alphabetically from “Air-Brake” to “Wreck,” looking up every possible word which might title an article of importance to him. He finds them all conveniently gathered into a brief space under the department of Railway Engineering and the sub-head Motive Power and

TO THE USER

Equipment, and on the adjoining pages before and after he may see everything published during the month on the closely allied subjects of Conducting Transportation and of Permanent Way. It is like running his eye over the shelves of a well-managed library. The literature he wants to know about is all there; perhaps, also, something very important he had not yet heard of, and therefore could not have looked up in an alphabetical list, is brought directly to his notice by this very Classified Index. This is possibly one of the greatest services the INDEX renders to its regular users.

In addition to this, the retention of the classified form has the very important advantage of permitting the issue of the volume annually, immediately after the close of each year, while the matter indexed is still fresh and at its maximum of serviceability. The old through-and-through alphabetic arrangement required a radical re-editing of every item that had appeared in the monthly parts of *THE ENGINEERING MAGAZINE*—so radical that it was practically equivalent to rewriting the entire work. In view of the limited outlet for the book, this undertaking was commercially inexpedient; professionally, it involved a heavy burden of service which could not be undertaken except at comparatively long intervals. It took about five years to recover from one volume and bring out another, and much of the literature of engineering becomes obsolete in five years.

The "Classification of the Index" facing the first page of the index notes should always be consulted before attempting to look up any given subject. The searcher will decide to which main division and sub-division of engineering the information he seeks logically belongs, and then turn to the page indicated in this "Classification." It will be observed that the catch-words indicating the first and last items on each page run in alphabetical order throughout the division indicated by the running heads to the pages.

Serial articles are indexed upon the appearance of the first instalment only, thus giving the searcher the clue by which the succeeding articles can be found. This rule has been waived in some instances of articles in two or three instalments, which are indexed entire.

When the great number of subjects dealt with is considered, as well as the fact that many important articles include several subjects, it will be realized that the classification has in many instances necessarily been a compromise between conflicting conditions; but it is believed that the system as a whole will serve the great purpose which has always been kept in view, that of guiding the searcher to his destination with a minimum of labor and uncertainty.

The comprehensive scope of the INDEX will be seen upon examination of the list of periodicals included. This comprises about two hundred and fifty publications, representing seventeen nations and colonies and six languages. About three-fourths of these journals are printed in English, the others being in German, French, Spanish, Italian, and Dutch. With every entry a brief descriptive note is given defining the scope and purport of the article, and in many cases this is sufficient for the purposes of the investigator and saves him the labor of further search. In general, however, the INDEX is used as a guide

TO THE USER

to the otherwise overwhelming mass of information contained in the huge files of the engineering periodicals stacked on the shelves of reference libraries throughout the world. The assembled sets of the great technical journals brought together in libraries such as those of the United Engineering Societies or the American Society in New York, or of the British Institution of Civil Engineers, might well overwhelm the time and patience of any individual who would search there for special information of which he had need. By this volume and its predecessors he is guided swiftly and accurately to the exact point he wishes to reach.

The work as a whole represents the continuation of that originally started by the late Professor J. B. Johnson in the Journal of the Association of Engineering Societies in 1884, and turned over by that association to THE ENGINEERING MAGAZINE at the close of 1895. The previous volumes, published in 1892, 1896, 1901, 1906, and 1907, respectively, covered with increasing fulness and thoroughness the field of periodical literature in engineering and closely related applied sciences. This latest volume brings the investigator down to the close of 1907, while the earlier parts enable searches such as occur in patent cases and the like to be prosecuted with a minimum of cost and delay.

REFERENCE LIST OF PERIODICALS

TITLES AND ABBREVIATIONS

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In nearly every instance the abbreviated titles of periodicals indexed will be intelligible without further explanation, but in the following list all the titles are given, together with the addresses, in order that no possible difficulty may appear in the placing of references. The titles are arranged alphabetically in the order of the abbreviations, each being followed by the full title and place of publication. It is to be noted that *w*=weekly; *s.w*=semi-weekly; *m*=monthly; *s.m*=semi-monthly; *b.m*=bi-monthly; *q*=quarterly; *yr*=yearly.

- Alliance Industrielle**—Alliance Industrielle. *m.* Brussels.
- Am Arch**—American Architect. *w.* New York.
- Am Engr & R R Jour**—American Engineer and Railroad Journal. *m.* New York.
- Am Gas Lgt Jour**—American Gas Light Journal. *w.* New York.
- Amer Inst of Archts**—American Institute of Architects. *yr.* New York.
- Am Jour Sci**—American Journal of Science. *m.* New Haven, Conn.
- Am Mach**—American Machinist. *w.* New York.
- Am Tel Jour**—American Telephone Journal. *w.* New York.
- Ann d Ponts et Chauss**—Annales des Ponts et Chaussées. *m.* Paris.
- Ann della Societa d Ing e d Arch Ital**—Annali della Società degli Ingegneri e degli Architetti Italiani. *w.* Rome.
- Arch Rec**—Architectural Record. *m.* New York.
- Arch Rev**—Architectural Review. *m.* Boston, Mass.
- Arch't**—Architect. *w.* London.
- Arch't & Build's Mag**—Architect's and Builder's Magazine. *m.* New York.
- Aust Min Stand**—Australian Mining Standard. *w.* Melbourne.
- Autocar**—Autocar. *w.* Coventry, England.
- Auto Jour**—Automotor Journal. *w.* London.
- Auto Mag**—Automobile Magazine. *m.* New York.
- Automobile**—Automobile. *m.* New York.
- Auto Topics**—Automobile Topics. *w.* New York.
- Beton und Eisen**—Beton und Eisen. *q.* Vienna.
- Boiler Maker**—Boiler Maker. *m.* New York.
- Brass Wld**—Brass World. *m.* Bridgeport, Conn.
- Br Build**—Brick Builder. *m.* Boston, Mass.
- Brit Arch**—British Architect. *w.* London.
- Brit Columbia Min Rec**—British Columbia Mining Record. *m.* Victoria, B. C.
- Builder**—Builder. *w.* London.

## REFERENCE LIST OF PERIODICALS.

- Bull Am Ir & St Assn**—Bulletin of the American Iron and Steel Association. *w.* Philadelphia, Pa.
- Bull Bur of Standards**—Bulletin of the Bureau of Standards. Washington, D. C.
- Bull Dept Labor**—Bulletin of Department of Labor. *b.m.* Washington, D. C.
- Bull Inter Ry Cong**—Bulletin of the International Railway Congress. *m.* Brussels.
- Bull Sci**—Bulletin Scientifique. *m.* Liège, Belgium.
- Bull Soc d'Encour**—Bulletin de la Société d'Encouragement. *m.* Paris.
- Bull Soc Int d'Electriciens**—Bulletin de la Société Internationale d'Electriciens. *m.* Paris.
- Bull Tech d l Suisse Rom**—Bulletin Technique de la Suisse Romande. *s.m.* Lausanne, Switzerland.
- Bull Univ of Illinois**—Bulletin of the University of Illinois. Urbana, Ill.
- Bull Univ Kansas**—Bulletin of the University of Kansas. *b.m.* Lawrence.
- Bull Univ Wis**—Bulletin of the University of Wisconsin. Madison, Wis.
- 
- Cal Jour of Tech**—California Journal of Technology. *m.* Berkeley.
- Can Arch**—Canadian Architect. *m.* Toronto.
- Can Elec News**—Canadian Electrical News. *m.* Toronto.
- Can Eng**—Canadian Engineer. *m.* Toronto and Montreal.
- Can Min Jour**—Canadian Mining Journal. *s.m.* Toronto.
- Can Soc of Civ Engrs**—Canadian Society of Civil Engineers. Montreal.
- Cassier's Mag**—Cassier's Magazine. *m.* New York and London.
- Cement**—Cement. *b.m.* New York.
- Cement Age**—Cement Age. *m.* New York.
- Central Sta**—Central Station. *m.* New York.
- Chem, Met & Min Soc of S Africa**—Chemical, Metallurgical and Mining Society of South Africa. *m.* Johannesburg.
- Clay Rec**—Clay Record. *s.m.* Chicago.
- Col Guard**—Colliery Guardian. *w.* London.
- Col Univ Quar**—Columbia University Quarterly. *q.* New York.
- Compressed Air**—Compressed Air. *m.* New York.
- Comptes Rendus**—Comptes Rendus de l'Académie des Sciences. *w.* Paris.
- Con Rev**—Contemporary Review. *m.* London.
- Cons Repts**—Consular Reports. *m.* Washington, D. C.
- Cornell Civ Engr**—Cornell Civil Engineer. *m.* Ithaca, N. Y.
- 
- Deutsche Bau**—Deutsche Bauzeitung. *s.w.* Berlin.
- Dom Eng**—Domestic Engineering. *w.* Chicago.
- 
- Economic Geol**—Economic Geology. *m.* South Bethlehem, Pa.
- Eisenbahntech Zeitschr**—Eisenbahntechnische Zeitschrift. *b.m.* Berlin.
- El Arte y la Ciencia**—El Arte y la Ciencia. *m.* City of Mexico.
- Elec Age**—Electrical Age. *m.* New York.
- Elec Eng Lond**—Electrical Engineer. *w.* London.
- Elec Jour**—Electric Journal. *m.* Pittsburg, Pa.
- Elec Lond**—Electricity. *w.* London.
- Elect'n Lond**—Electrician. *w.* London.
- Elec Paris**—Electricien. *w.* Paris.
- Elec Rev**—Electrical Review. *w.* New York.
- Elec Rev Lond**—Electrical Review. *m.* London.
- Elec Ry Rev**—Electric Railway Review. *w.* Chicago.
- Elec Wld**—Electrical World. *w.* New York.

## REFERENCE LIST OF PERIODICALS.

- Electrochem Ind**—Electrochemical Industry. *m.* New York.  
**Electrochem & Met Ind**—Electrochemical and Metallurgical Industry. *m.* New York.  
**Electrochem Zeitschr**—Elektrochemische Zeitschrift. *m.* Berlin.  
**Electrotech Rundschau**—Electrotechnische und Polytechnische Rundschau. *w.* Potsdam.  
**Elektrotech u Maschinenbau**—Elektrotechnik und Maschinenbau. *w.* Vienna.  
**Elektrotech Zeitschr**—Elektrotechnische Zeitschrift. *w.* Berlin.  
**Elettricita**—Elettricita. *w.* Milan.  
**Eng & Min Jour**—Engineering and Mining Journal. *w.* New York.  
**Eng Mag**—Engineering Magazine. *m.* New York and London.  
**Eng News**—Engineering News. *w.* New York.  
**Engng**—Engineering. *w.* London.  
**Engng-Contr**—Engineering-Contracting. *w.* New York.  
**Eng Rec**—Engineering Record. *w.* New York.  
**Eng Rev**—Engineering Review. *m.* London.  
**Eng Soc W Pa**—Engineers' Society of Western Pennsylvania. *m.* Pittsburg, Pa.  
**Eng Times**—Engineering Times. *m.* London.  
**Engr Lond**—Engineer. *w.* London.  
**Engr U S A**—Engineer. *s.m.* Chicago.
- Far East Rev**—Far Eastern Review. *m.* Manila, P. I.  
**Fire & Water**—Fire and Water. *w.* New York.  
**Foundry**—Foundry. *m.* Cleveland, O.
- Gas Engine**—Gas Engine. *m.* Cincinnati, O.  
**Gas Engrs' Mag**—Gas Engineers' Magazine. *m.* Birmingham, Eng.  
**Gas Wld**—Gas World. *w.* London.  
**Génie Civil**—Génie Civil. *w.* Paris.  
**Gesundheits-Ing**—Gesundheits-Ingenieur. *s.m.* Munich, Bavaria.  
**Giorn dei Lav Pubb e d Str Ferr**—Giornale dei Lavori Pubblici e delle Strade Ferrate. *w.* Rome.  
**Glaser's Ann**—Glaser's Annalen für Gewerbe und Bauwesen. *s.m.* Berlin.  
**Glückauf**—Glückauf. *w.* Essen, Germany.
- Harvard Engng Jour**—Harvard Engineering Journal. *qr.* Cambridge, Mass.  
**Heat & Ven Mag**—Heating and Ventilating Magazine. *m.* New York.
- Ice & Refrig**—Ice and Refrigeration. *m.* New York.  
**Ind Advocate**—Industrial Advocate. *m.* Halifax, N. S.  
**Ind & East Eng**—Indian and Eastern Engineer. *m.* Calcutta.  
**Ind Engng**—Indian Engineering. *w.* Calcutta.  
**Ind Wld**—Industrial World. *w.* Pittsburg, Pa.  
**Industria**—Industria. *w.* Milan.  
**Ingenieria**—La Ingenieria. *b.m.* Buenos Aires, Argentina.  
**Ingenieur**—De Ingenieur. *w.* Hague.  
**Ins Engng**—Insurance Engineering. *m.* New York.  
**Int Marine Engng**—International Marine Engineering. *m.* New York.  
**Ir Age**—Iron Age. *w.* New York.  
**Ir & Coal Trds Rev**—Iron and Coal Trades Review. *w.* London.  
**Ir & St Trds Jour**—Iron and Steel Trades Journal. *w.* London.  
**Ir Trd Rev**—Iron Trade Review. *w.* Cleveland.

## REFERENCE LIST OF PERIODICALS.

- Jour of Accountancy**—Journal of Accountancy. *m.* New York.
- Jour Am Foundrymen's Assn**—Journal of the American Foundrymen's Association. *m.* New York.
- Jour Am Soc of Nav Engrs**—Journal of the American Society of Naval Engineers. *qr.* New York.
- Jour Assn Eng Socs**—Journal of the Association of Engineering Societies. *m.* Boston, Mass.
- Jour Can Min Inst**—Journal of the Canadian Mining Institute. *yr.* Montreal.
- Jour Fr Inst**—Journal Franklin Institute. *m.* Philadelphia, Pa.
- Jour Ir & St Inst**—Journal of the Iron and Steel Institute. *q.* London.
- Jour N E Water Wks Assn**—Journal of the New England Waterworks Association. *q.* Boston, Mass.
- Jour Roy Inst of Brit Arch**—Journal of the Royal Institute of British Architects. *s.m.* London.
- Jour Roy United Service Inst**—Journal Royal United Service Institute. *m.* London.
- Jour San Inst**—Journal of Sanitary Institute. *q.* London.
- Jour S African Assn of Engrs**—Journal of South African Association of Engineers. *m.* Johannesburg.
- Jour Soc Arts**—Journal of the Society of Arts. *w.* London.
- Jour Transvaal Inst of Mech Engrs**—Journal of the Transvaal Institute of Mechanical Engineers. Johannesburg, S. A.
- Jour U S Artillery**—Journal of United States Artillery. *b.m.* Fort Monroe, Va.
- Jour W of Scot Ir & St Inst**—Journal West of Scotland Iron and Steel Institute. *m.* Glasgow.
- Jour Worcester Poly Inst**—Journal of Worcester Polytechnic Institute. *b.m.* Worcester, Mass.
- Jour W Soc Engrs**—Journal of the Western Society of Engineers. *b.m.* Chicago.
- 
- Locomotive**—Locomotive. *m.* Hartford, Conn.
- 
- Mach**—Machinery. *m.* New York.
- Marine Rev**—Marine Review. *w.* Cleveland, O.
- Mnfrs Rec**—Manufacturers' Record. *w.* Baltimore.
- Mech Eng**—Mechanical Engineer. *w.* Manchester, Eng.
- Mech Wld**—Mechanical World. *w.* London.
- Mem Soc Ing Civ de France**—Memoires de la Société des Ingenieurs Civils de France. *m.* Paris.
- Métallurgie**—Métallurgie. *w.* Paris.
- Met Work**—Metal Worker. *w.* New York.
- Minerva**—Minerva. *w.* Rome.
- Mines & Min**—Mines and Minerals. *m.* Scranton, Pa.
- Min Jour**—Mining Journal. *w.* London.
- Min Rept**—Mining Reporter. *w.* Denver, Colo.
- Min & Sci Pr**—Mining and Scientific Press. *w.* San Francisco, Cal.
- Min Wld**—Mining World. *w.* Chicago.
- Mitt aus d Kgl Tech Versuchsanst**—Mittheilungen aus der Königlich Technischen Versuchsanstalt. Berlin.
- Mitt d Ver f d Förd d Local u Strassenbahnwesens**—Mittheilungen des Vereines für die Förderung des Local- und Strassenbahnwesens. *m.* Vienna.
- Monit Indust**—Moniteur Industriel. *w.* Paris.
- Motor Car Jour**—Motor Car Journal. *w.* London.
- Munic Engng**—Municipal Engineering. *m.* Indianapolis, Ind.
- Munic Jour & Eng**—Municipal Journal and Engineer. *m.* New York.

## REFERENCE LIST OF PERIODICALS.

- Nat Geog Mag**—National Geographic Magazine. *m.* Washington.  
**Nature**—Nature. *w.* London.  
**Naut Gaz**—Nautical Gazette. *w.* New York.  
**Nineteenth Cent**—Nineteenth Century. *m.* London.  
**N Z Mines Rec**—New Zealand Mines Record. *m.* Wellington.
- Oest Wochenschr f d Oeff Baudienst**—Oesterreichische Wochenschrift für den öffentlichen Baudienst. *w.* Vienna.  
**Oest Zeitschr f Berg- und Hüttenwesen**—Oesterreichische Zeitschrift für Berg- und Hüttenwesen. *w.* Vienna.  
**Ores and Met**—Ores and Metals. *w.* Denver, Colo.
- Plumb & Dec**—Plumber and Decorator. *m.* London.  
**Pop Sci M**—Popular Science Monthly. *m.* New York.  
**Power**—Power. *m.* New York.  
**Prac Eng**—Practical Engineer. *w.* London.  
**Pro Age**—Progressive Age. *s.m.* New York.  
**Pro Am Inst Elec Eng**s—Proceedings American Institute of Electrical Engineers. *m.* New York.  
**Pro Am Inst Min Eng**s—Proceedings American Institute of Mining Engineers. *m.* New York.  
**Pro Am Soc Civ Eng**s—Proceedings of the American Society of Civil Engineers. *m.* New York.  
**Pro Am Soc Heat & Ven Eng**s—Proceedings American Society of Heating and Ventilating Engineers. New York.  
**Pro Am Soc Mech Eng**s—Proceedings American Society of Mechanical Engineers. New York.  
**Pro Am Water Works Assn**—Proceedings of the American Water Works Association. *yr.* Charleston, S. C.  
**Pro Can Soc Civ Eng**s—Proceedings of the Canadian Society of Civil Engineers. *m.* Montreal.  
**Pro Central Ry Club**—Proceedings of the Central Railway Club. *b.w.* New York.  
**Pro Engs Club of Phila**—Proceedings Engineers' Club of Philadelphia. *q.* Philadelphia, Pa.  
**Pro Engs Soc of West Penn**—Proceedings of the Engineers Society of Western Pennsylvania. *m.* Pittsburg, Pa.  
**Pro Inst Civ Eng**s—Proceedings of the Institution of Civil Engineers. *q.* London.  
**Pro Inst Elec Eng**s—Proceedings of the Institution of Electrical Engineers. *q.* London.  
**Pro Inst Mech Eng**s—Proceedings of the Institution of Mechanical Engineers. London.  
**Pro Inst Min & Met**—Proceedings of the Institution of Mining and Metallurgy. *m.* London.  
**Pro Iowa Ry Club**—Proceedings of the Iowa Railway Club. *m.* Des Moines, Ia.  
**Pro N Y Ry Club**—Proceedings of the New York Railway Club. *m.* New York.  
**Pro Pac Coast Ry Club**—Proceedings Pacific Coast Railway Club. *m.* San Francisco, Cal.  
**Pro Ry Club of Pittsburg**—Proceedings of the Railway Club of Pittsburg. *m.* Pittsburg, Pa.  
**Pro Soc Eng**s—Proceedings of the Society of Engineers. London.  
**Pro S & S-W Ry Club**—Proceedings of the Southern and Southwestern Railway Club. *yr.* Atlanta, Ga.  
**Pro St Louis Ry Club**—Proceedings St. Louis Railway Club. *m.* St. Louis, Mo.

## REFERENCE LIST OF PERIODICALS.

**Pro U S Naval Inst**—Proceedings United States Naval Institute. *q.* Annapolis, Md.  
**Pro West Ry Club**—Proceedings of the Western Railway Club. *m.* Chicago.  
**Pub Works**—Public Works. *q.* London.

**Quarry**—Quarry. *m.* London.

**Queensland Gov Min Jour**—Queensland Government Mining Journal. *m.* Brisbane, Australia.

**Rev de Mécanique**—Revue de Mécanique. *m.* Paris.

**Rev de Metallurgie**—Revue de Metallurgie. *m.* Paris.

**Revist Tech Ind**—Revista Tecnológico Industrial. *m.* Barcelona, Spain.

**Rev of Revs**—Review of Reviews. *m.* London and New York.

**Revue Gen des Chemin de Fer**—Revue Générale des Chemins de Fer. *m.* Paris.

**Revue Gen des Sci**—Revue Générale des Sciences. *w.* Paris.

**Rivista Gen d Ferrovie**—Rivista Generale di Ferrovie. *w.* Florence.

**Rivista Marittima**—Rivista Marittima. *m.* Rome.

**R R Gaz**—Railroad Gazette. *w.* New York.

**Rudder**—Rudder. *m.* New York.

**Ry Age**—Railway Age. *w.* Chicago.

**Ry & Engng Rev**—Railway and Engineering Review. *w.* Chicago.

**Ry & Loc Engng**—Railway and Locomotive Engineering. *m.* New York.

**Ry Mas Mech**—Railway Master Mechanic. *m.* Chicago.

**Schiffbau**—Schiffbau. *s.m.* Berlin.

**Sch Mines Quar**—School of Mines Quarterly. *q.* New York.

**Schw Bauz**—Schweizerische Bauzeitung. *w.* Zürich.

**Sci Am**—Scientific American. *w.* New York.

**Sci Am Sup**—Scientific American Supplement. *w.* New York.

**Sib Jour Engng**—Sibley Journal of Engineering. *m.* Ithaca, N. Y.

**Soc Belge d Elec'ns**—Société Belge des Electriciens. *m.* Brussels.

**Stahl u Eisen**—Stahl und Eisen. *s.m.* Düsseldorf, Germany.

**Stevens Ind**—Stevens Institute Indicator. *q.* Hoboken, N. J.

**St Ry Jour**—Street Railway Journal. *w.* New York.

**St Ry Rev**—Street Railway Review. *m.* Chicago.

**Tech**—Technograph. *yr.* Urbana, Ill.

**Tech Qr**—Technology Quarterly. *q.* Boston, Mass.

**Tech Rev**—Technology Review. *qr.* Boston, Mass.

**Telephony**—Telephony. *m.* Chicago.

**Tram & Ry Wld**—Tramway and Railway World. *m.* London.

**Trans Am Soc Nav Arch & Mar Engrs**—Transactions of the American Society of Naval Architects and Marine Engineers. New York.

**Trans Assn of Cic Engrs of Cornell Univ**—Transactions of the Association of Civil Engineers of Cornell University. Ithaca, N. Y.

**Trans Inst Eng & Ship in Scot**—Transactions Institute of Engineers and Shipbuilders in Scotland. Glasgow.

**Trans N-E Coast Inst of Engrs & Shbldrs**—Transactions of the Northeast Coast Institute of Engineers and Shipbuilders. *m.* Newcastle-on-Tyne.

**U S Cons Repts**—Consular Reports. *m.* Washington, D. C.

**Verkehrstech Woche u Eisenbahntech Zeitschr**—Verkehrstechnische Woche und Eisenbahntechnische Zeitschrift. *w.* Berlin.

*REFERENCE LIST OF PERIODICALS.*

**Wisconsin Engr**—Wisconsin Engineer. *b.m.* Madison, Wis.

**Wlds Work**—World's Work. *m.* New York.

**Wood Craft**—Wood Craft. *m.* Cleveland, O.

**Yacht**—Le Yacht. *w.* Paris.

**Yale Sci Month**—Yale Scientific Monthly. *m.* New Haven, Conn.

**Zeitschr d Mit Motorwagen Ver**—Zeitschrift des Mitteleuropäischen Motorwagen Vereines. *s.m.* Berlin.

**Zeitschr d Oest Ing u Arch Ver**—Zeitschrift des Oesterreichischen Ingenieur- und Architekten Vereines. *w.* Vienna.

**Zeitschr d Ver Deutscher Ing**—Zeitschrift des Vereines Deutscher Ingenieure. *w.* Berlin.

**Zeitschr f d Gesamte Turbinenwesen**—Zeitschrift für das Gesamte Turbinenwesen. *w.* Munich.

**Zeitschr f Werkzeug**—Zeitschrift für Werkzeugmaschinen und Werkzeug. *b.w.* Berlin.



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Design of Reinforced Concrete Structures—Abutments. Walter W. Colpitts. Describes in detail the design of reinforced concrete abutments adopted by the Kansas City, Mexico, and Orient Ry. Ills. 2500 w. Ry Age—Aug. 23, 1907. No. 86567.

Discussion, Design and Specifications for a Reinforced Concrete Bridge Abutment. T. M. Fyshe. Drawings with detailed description of the design, with related information. 8000 w. Can Soc of Civ Engrs—Oct. 17, 1907. No. 87854 N.

##### Anchorage.

Cost of the Brooklyn Anchorage of the Williamsburg Bridge, New York City. Francis L. Pruyn. Gives the main items of the contract for this work and the cost of each, with explanation of methods. Ills. 2200 w. Engng-Con—Jan. 30, 1907. No. 82004.

Contractor's Plant and Methods for Constructing the New York Anchorages of the Manhattan Bridge. Rearranged from an article by Charles M. Ripley, with additional matter. Explains the methods employed on the New York

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side of the river. 2500 w. Engng-Con—May 8, 1907. No. 84275.

The Manhattan Anchorage of Manhattan Bridge. C. M. Ripley. Describes the work of building this anchorage, commenting on the volume of masonry and extensive use of concrete. 2500 w. Munic Engng—June, 1907. No. 85176 C.

Concrete Anchorage in the Brooklyn Bridge. Charles M. Ripley. On the Manhattan anchorage for Brooklyn Bridge, No. 3, and the contractor's plant and methods used. Ills. 2200 w. Cement Age—Oct., 1907. No. 87859.

See also Manhattan and New York City, under BRIDGES.

##### Aqueducts.

Aqueduct Bridges on the Illinois and Mississippi Canal. Fred W. Honens. Illustrated description of aqueducts which carry this canal over the more important streams. There are nine in all, varying in length from 4 to 10 spans of 35 ft. each. 2000 w. Eng Rec—June 29, 1907. Serial. 1st part. No. 85324.

##### Arches.

Arched Structures. Brief review of old methods and illustrations of modern arches used for bridges and railroad structures. 1200 w. Ry & Loc Engng—Dec., 1906. No. 80869 C.

The Construction of the 175th Street Arch, New York City. Describes methods used in building an elliptical brick arch, of 66-ft. span and 20-ft. rise, built on a 9 deg. skew. Ills. 1500 w. Eng Age—Oct., 1907. No. 87859.

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Some Three-Hinged Concrete Arches in Germany. Illustrates and describes bridges of this type in Bavaria. 900 w. Eng News—May 2, 1907. No. 84042.

Progress in the Construction of Wide-Span, Flat, Heavy Bridges (Fortschritte im Bau Weitgespannter, Flacher, Massiver Brücken), Hr. Leibbrand. Abstract of address before the Association of German Architects' and Engineers' Societies, giving an illustrated review of the recent development of large masonry arches. Serial, 1st part. 2000 w. Beton u Eisen—No. 10. Oct. 1906. No. 80649 F.

The Progress in Building Flat, Solid Arches of Long Spans. Extracts from a paper by Herr Liebbrand discussing especially reinforced-concrete structures with hinged arches. Ills. 2000 w. Cement—May, 1907. Serial. 1st part. No. 84555 C.

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## Bascule.

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The New Flushing Bascule Bridge. A bridge recently built over Flushing Creek, Long Island, is illustrated and described. 1000 w. Eng Rec—Nov. 10, 1906. No. 80328.

Bascule Bridge for the Corporation of Portsmouth. Illustrates and describes a bridge having two equal bascules, fitted with a complete electric equipment for raising them. 1000 w. Engng—July 5, 1907. No. 85592 A.

Page Single-Leaf Double-Track Bascule Railroad Bridge Over the Chicago River. A. R. Ekstrom. Illustrated description of a bridge replacing a swing bridge, so as to give a clear channel to navigation. 1200 w. R R Gaz—June 14, 1907. No. 85074.

Rall Bascule Bridge Over the Illinois River at Peoria. A recently completed double-leaf bascule bridge of the Rall type is illustrated and described. 700 w. R R Gaz—July 5, 1907. No. 85467.

Some New Bascule Bridges. Brief illustrated descriptions of bridges of the Rall type and Scherzer type, at Peoria, Ill., and the Page type, at Chicago. 1800 w. Eng News—July 18, 1907. No. 85734.

New Bascule Bridge at Duisbourg. Illustrated detailed description of a new bridge costing approximately £24,465.

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## Bearings.

Bearings for King Edward VII. Bridge, Newcastle-on-Tyne. Illustrations and particulars regarding the method of allowing for the expansion and contraction of the girders. 500 w. Engr, Lond—Jan. 25, 1907. No. 82157 A.

## Birmingham, Eng.

Smallheath Bridge, Birmingham. Plate and illustrated description of an interesting bridge built in connection with a scheme to connect by a thoroughfare the districts of Smallheath and Sparkbrook, and the southern part of the city of Birmingham. It crosses the Great Western Ry. Co.'s lines, and also a canal. 4500 w. Engng—May 10, 1907. Serial. 1st part. No. 84442 A.

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The Widening of Blackfriars Bridge. Plan and description of this interesting engineering work now in progress in London. 1500 w. Engng—June 28, 1907. No. 85502 A.

## Blackwell's Island.

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The Blackwell's Island Bridge. Illustrated detailed description of a noteworthy example of eyebar cantilever construction now being erected by the Pennsylvania Steel Co. at New York. 2500 w. Ir Age—March 7, 1907. No. 82788.

Erection of the Cantilever Spans of the Blackwell's Island Bridge. Illustrated description of the erection of this bridge which crosses the two channels of the East River, and over Blackwell's Island at New York. 2200 w. Eng Rec—March 2, 1907. No. 82728.

Progress of the Blackwell's Island Bridge Erection. Information from the official report of May 11, 1907, with illustrated description of recent work. 1600 w. Eng Rec—June 8, 1907. No. 84819.

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the Blackwell's Island Bridge. Illustrated description of work on this bridge across the East River, at New York. 1000 w. Eng Rec—June 15, 1907. No. 85063.

The Erection of the Blackwell's Island Bridge. Illustrations, with brief account of the erection of the new cantilever bridge over the East River, at New York. 1600 w. Sci Am—Aug. 10, 1907. No. 86303.

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## Brooklyn.

Enlarging the Manhattan Terminal of the Brooklyn Bridge. Gives plans terminal which it is believed will solve the problem due to congested traffic. Also editorial reviewing the past history and showing the enormous increase in traffic. 4000 w. Eng News—Jan. 31, 1907. No. 82030.

## Bronx.

The Bronx River Bridge at East 233d St., New York. Illustrates and describes improvements including a steel structure over the four track of the New York & Harlem R. R., a concrete arch over the Bronx River, and masonry retaining walls. The river crossing is an elliptical concrete arch with interesting features. 600 w. Eng Rec—Feb. 23, 1907. No. 82526.

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## Cantilever.

Cantilever Bridge Over the Seine at Passy; Metropolitan Railway of Paris. R. Bonnin. Illustrated detailed description of this interesting new bridge and its approaching viaducts. 2500 w. Eng News—Nov. 15, 1906. No. 80443.

See also Blackwell's Island, India, and Quebec, under BRIDGES.

## Centering.

Moving the Centering of the Walnut Lane Arch at Philadelphia. Illustrates and describes the method of moving the centering from the finished ring to its position under the twin ring. 600 w. Eng News—Aug. 15, 1907. No. 86394.

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Steel Sheet Piling for Bridge Pier Cofferdams. Illustrated description of the construction of an electric railway bridge crossing the Illinois River at Peoria. 1800 w. Eng Rec—March 2, 1907. No. 82714.

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## Concrete Arches.

The Piney Creek Bridge, Washington, D. C. Illustrates and describes the construction of this concrete arch bridge, 272 ft. long, 25 ft. wide, and about 50 ft. from the surface of the water. 1800 w. Eng Rec—Jan. 26, 1907. No. 81946.

The Piney Branch Concrete Arch Bridge at Washington, D. C. W. J. Douglas and W. P. Darwin. Illustrates and describes the method of laying the arch ring, centering, etc. 1800 w. Eng News—June 20, 1907. No. 85156.

The Walnut Lane Concrete Arch Bridge Across the Wissahickon, Philadelphia. Illustration, drawings, and description of a beautiful concrete bridge designed to carry highway traffic. 2200 w. Eng News—Jan. 31, 1907. No. 82019.

The Walnut Lane Bridge, Fairmount Park, Philadelphia. An illustrated description of the methods employed in constructing a concrete arch of 233 feet span. 4000 w. Eng Rec—Aug. 31, 1907. No. 86687.

The Connecticut Avenue Bridge, Washington, D. C. Illustrated description of the Portland cement concrete highway bridge carrying Connecticut Ave. across Rock Creek. The cost of this nearly completed structure is \$800,000. 1600 w. Eng Rec—Feb. 16, 1907. No. 82411.

Methods and Cost of Constructing the Connecticut Ave. Concrete Arch Bridge at Washington, D. C. Illustrated description of this structure and the methods of construction, giving details of cost of the materials and work. 2800 w. Engng-Con—May 22, 1907. No. 84535.

Three-Hinged-Arch Bridges of Concrete (Ponts en Béton à trois Rotules). Descriptions of two bridges over the Iller River at Lautrach and Kempten, Bavaria, methods of construction, etc. Ill. 2200 w. Génie Civil—Feb. 16, 1907. No. 82984 D.

The Railway Arches of Concrete at Lautrach and Kempten, Bavaria. Illustrates and describes long span, three-hinge concrete arches without reinforcement, carrying railways, recently built across the Iller, a tributary of the Danube River. 1000 w. Eng Rec—May 11, 1907. No. 84323.

See also Centering, under BRIDGES.

## Connecticut River.

The New Connecticut River Bridge of the New York, New Haven & Hartford Railroad. Illustrated description of the

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bridge between Lyme and Saybrook, Conn., which will eventually be a four-track structure, though the superstructure for only the two south tracks will for the present be in service. 1200 w. Ry Age—March 22, 1907. No. 83254.

### Culverts.

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### Double-Deck.

The Bridge Over the River Wear at Sunderland. Illustrated description of interesting construction work in connection with the erection of this double-deck railway and road bridge. 2-page plate. 1600 w. Engng—July 12, 1907. No. 85870 A.

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### Drawbridge.

Drawbridge over the North Sea Canal, Amsterdam (Die Nieuwe Hembrug over het Noordzeekanaal en de daarmede in verband staande omlegging van den spoorweg Helder-Amsterdam). H. N. Francois. Description of a 455 ft. draw span over a ship canal. Illus. 5900 w. De Ingenieur—Jan. 5, 1907. No. 82336 D.

A Center-Bearing Drawbridge with Pneumatic Raising Jack and Turning Engine. Translated from *Zeitschrift für Bauwesen*. Illustrated description of an interesting structure recently completed in the city of Hamburg, Germany. 2000 w. Eng News—April 4, 1907. No. 83452.

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### Erecting Costa.

Cost of Erecting Two Steel Truss Bridges of 180 ft. Span, and One Plate Lattice Girder Bridge of 100 ft. Span. Gives data not including the cost of erecting the false-work. 700 w. Engng-Con—May 8, 1907. No. 84272.

### Failures.

Some Bridge Failures During a Heavy Cyclone in 1905, in Gujerat, India. Andrew Thomas. An account of the extensive damages due to an unusual flood, and the rapid construction of temporary bridges. Plate. 2000 w. Inst of Civ Engrs—No. 3633. No. 82041 N.

Failure of Masonry Arch Carrying Erie Canal Over Onondaga Creek, Syracuse, N. Y. An illustrated account of the collapse on July 30, which has closed the canal to through traffic in one of its

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busiest seasons. 1700 w. Eng News—Aug. 8, 1907. No. 86313.

The Ponts-de-Cé Disaster (La Catastrophe des Ponts-de-Cé). Jean Phizey. A description of the failure of this railroad bridge on August 4, by which a passenger train was precipitated into the River Loire. Ills. 4800 w. Génie Civ—Sept. 14, 1907. No. 87611 D.

### Foundations.

Methods and Costs of Constructing Two Concrete Foundations for Draw Bridges. Daniel J. Hauer. Gives details of two examples identically the same, but varying in cost. Ills. 2000 w. Engng-Con—Nov. 7, 1906. No. 80231.

Bridge Foundations of Ferro-Concrete in the River Foyle. Illustrations, with brief description of piers sunk to foundation level by caissons constructed entirely of ferro-concrete. 400 w. Engng—May 10, 1907. No. 84445 A.

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### Ganges.

The Report of the Ganges Bridge Committee. Report on three alternative bridge schemes for crossing the Ganges River by railways. 1200 w. Engr, Lond—May 17, 1907. No. 84588 A.

### Germany.

Some Notable German Bridges. F. C. Kuntz. Illustrated descriptions of beautiful bridges at Harburg, and at Mainz and other points on the Rhine. 1700 w. Sci Am—Aug. 31, 1907. No. 86677.

### Girders.

Continuous Girders. Gives calculations for determining the design of a type of railway overbridge. Ills. 2500 w. Engr, Lond—Sept. 27, 1907. No. 87525 A.

### Guatemala.

Bridges and Viaducts on the Guatemala Ry. Outlines the extension work in progress on this railway, and gives a comparison of the designs submitted for bridges and viaducts with estimates of quantities and cost. Ills. 3000 w. Eng Rec—Dec. 8, 1906. No. 80911.

The Rio Fiscal Bridge on the Guatemala Railway. Diagrams and description of a bridge 350 ft. long between abutments, which has a three-hinge spandrel-braced arch span of 209 ft. flanked by two plate girder approach spans of about 30 ft. each at both ends. 1200 w. Eng Rec—March 23, 1907. No. 83218.

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Methods and Cost of Constructing

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Concrete Highway Bridges by Day Labor in Green County, Iowa. 1700 w. Engng-Con—Sept. 4, 1907. No. 86830.

Economical Methods of Highway Bridge Construction. Describes wooden falsework adjustable to different heights and adapted to be used over and over again for successive bridge. Ills. 2000 w. Eng Rec—Aug. 24, 1907. No. 86563.

## Hudson River.

The New Sandy Hill-Fenimore Concrete-Steel Bridge Across the Hudson River, N. Y. Illustrated description of a structure including 15 arched spans, each 60-ft. in the clear. The exterior walls were of hollow concrete blocks, and the hollow places poured full of cement, making the structure monolithic. 1500 w. Cement—March, 1907. No. 83166 C.

## India.

Khushalgarh Bridge. Illustrated detailed description of a steel cantilever bridge now under construction over the River Indus. Plates. 1500 w. Engng—Feb. 22, 1907. No. 82834 A.

## Lattice Girder.

Strengthening an Old Lattice Girder Bridge. George Jacob Davis, Jr. Notes on the method used in computing the stresses in the Leonard St. bridge, Grand Rapids, Mich., and its failure and strengthening. Ills. 1200 w. Eng Rec—Sept. 28, 1907. No. 87307.

## Lift Span.

New Lift Bridge Over the Buffalo River. Illustrated description of one of the largest lift span bridges ever built. 700 w. Ir Trd Rev—July 11, 1907. No. 85528.

## Long Spans.

Noteworthy Early Examples of Long-Span Bridge Erection. Frank W. Skinner. An illustrated review of different methods employed on famous bridges. 7000 w. Eng Rec—March 2, 1907. No. 82709.

## Manhattan.

The Brooklyn Anchorage of the Manhattan Bridge. Contractor's Plant and Progress. Gustave Kaufman. An illustrated descriptive article. Discussion. 8500 w. No. 69. Pro Brooklyn Engrs' Club—1906. No. 85975 N.

The Manhattan Bridge Pedestal. Outline description of this bridge across the East River, at New York, with illustrated detailed description of the design and construction of the pedestals. 2500 w. Eng Rec—Oct. 19, 1907. No. 87784.

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The Queen's Bridge at The Hague (De Witte—Koninginne—brug te's—Gravenhage). F. C. J. van den Steen. An illustrated description of this masonry bridge giving the calculations made in its design. 9000 w. De Ingenieur—May 4, 1907. No. 84989 D.

New Stone Bridge at Orleans. Illustrated description of a bridge consisting of 7 stone arches with clear openings of 144.4 ft., with particulars relating to the design and construction. 3000 w. Engr, Lond—Feb. 8, 1907. No. 82470 A.

See also Arches, Blackfriars, Failures, Piers, Removals, Restoration, Rome, under BRIDGES.

### Maximum Loads.

Maximum Live-Load Bending Moments and Shears for Bridges Carrying Electric Cars. Calls attention to heavy construction cars, service and freight cars, that must at times pass over such bridges and makes a study of the maximum moments. 1500 w. Eng News—April 4, 1907. No. 83449.

### Mississippi.

Proposed New Bridges Over the Mississippi River at St. Louis, Mo. Map, showing present and proposed bridges, giving some particulars in regard to them. 1500 w. Eng News—March 21, 1907. No. 83206.

### Missouri River.

Missouri River Bridge of the Chicago, Milwaukee & St. Paul at Mobridge, S. D. Map showing location, with illustrated detailed description. 3000 w. Ry Age—March 22, 1907. No. 83251.

### Movable.

Movable Bridges. C. C. Schneider. A review of the mechanical features of movable bridges, with a set of specifications covering their operating machinery, submitted for discussion and criticism. 13600 w. Pro Am Soc of Civ Engrs—Feb., 1907. No. 83038 E.

### Natal.

The Connaught Bridge, Natal. Edward John Stead. A description of this bridge of twelve spans and its erection. 3 plates. 7000 w. Soc of Engrs—March 4, 1907. No. 83172 N.

### Newark, N. J.

The Jefferson St. Bridge, Newark, N. J. Illustrated description of a skew double-track, riveted, through-truss structure carrying the main line of the Central R. R. of New Jersey. 1800 w. Eng Rec—Feb. 16, 1907. No. 82416.

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## New Orleans

### New Orleans.

The New Orleans Railway Bridge, Elmer L. Corthell. An illustrated account of the physical, commercial and historical features of a project for a railway bridge over the Mississippi River. 4000 w. Eng Rec—Nov. 24, 1906. Serial. 1st part. No. 80575.

### Newtown Creek.

The Erection of the Newtown Creek Bridge. Illustrated description of a bridge consisting of two approaches connected by a two-leaf Scherzer draw span of about 150 ft. clear opening. 600 w. Eng Rec—Dec. 15, 1906. No. 80992.

### New York City.

Proposed East River Bridge; New York Connecting Railroad. Illustrations showing the proposed bridge at Ward's and Randall's islands which will join the belt line now building from Bay Ridge on the harbor, with the Harlem River branch of the New York, New Haven, & Hartford. 1200 w. R R Gaz—May 31, 1907. No. 84671.

Cost of the Brooklyn Anchorage of the Williamsburg Bridge, New York City. Francis L. Pruyn. Gives general plan and elevations, with details of cost. 2500 w. Engng-Con—Jan. 30, 1907. No. 82174.

### Nile.

The New Nile Bridges at Cairo. An account of the progress of the work on the three bridges under construction, illustrating the Rodah bridge—535 metres, or 1,755 ft., in length, and having a swing span. 1300 w. Engr, Lond—March 1, 1907. No. 83002 A.

### North Platte.

The North Platte River Bridge of the Union Pacific. Illustrates and describes the third bridge built at this point, briefly describing the two previous structures. The new bridge is a single-track structure of 40 spans. 900 w. R R Gaz—Dec. 14, 1906. No. 80966.

### Piers.

A Problem Relating to Railway-Bridge Piers of Masonry or Brickwork. Frederick Carl Esling. An investigation of stresses resulting in certain cases from the combined action of the horizontal and vertical forces. 2500 w. Inst of Civ Engrs—No. 3592. No. 80537 N.

Design of a Railway Bridge Pier. Charles Derleth, Jr. An illustrated statement of the methods of design of a bridge and caisson. 7800 w. Cal Jour of Tech—Nov. 1906. No. 80410.

The Detailed Cost of a Bridge Pneu-

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matic Caisson and Masonry Bridge Pier Data relating to the cost of labor and materials for three railway bridge piers built by the pneumatic caisson process. 2200 w. Engng-Con—May 8, 1907. No. 84274.

Methods and Cost of Constructing Six Crib Piers, Three Howe Truss Spans, and One Steel Draw Span. The present article deals with the construction of the piers, near the mouth of a river 19 ft. deep at extreme low tide, the top of the piers being 40 ft. above the river bed. 1800 w. Engng-Con—July 24, 1907. Serial. 1st part. No. 85902.

See also Foundations, and Plate Girder, under BRIDGES.

### Plate-Girders.

Web Stresses in Plate Girders. W. E. Lilly. Describes experiments undertaken to study the effect of various dispositions of stiffeners on the deformation of the web of the plate-girder. Ills. 4000 w. Engng—Feb. 1, 1907. No. 82253 A.

A Plate Girder Highway Arch Bridge. Illustrated description of a bridge in Princeton, N. J., consisting of four three-hinge plate girder arch spans. 900 w. Eng Rec—Aug. 17, 1907. No. 86421.

Methods and Cost of Constructing a Plate Girder Railway Bridge with Concrete Piers. Illustrated description of a bridge in Oklahoma, with an account of the methods of work and the cost. 2000 w. Engng-Con—April 3, 1907. No. 83472.

Detailed Cost of Erecting Three Plate Girder Bridges of Ten Spans. Data relating to the cost of erecting three plate girder bridges, on concrete abutments and piers, having pile foundations. 1000 w. Engng-Con—April 17, 1907. No. 83793.

The Warehouse Point Bridge of the New Haven R. R. Illustrated description of an interesting example of plate girder construction for heavy traffic at high speed, with an account of other bridges occupying this site. 1800 w. Eng Rec—April 27, 1907. No. 83945.

A Six-Track Solid-Floor Plate-Girder Bridge. Illustrated detailed description of bridge 60 on the main line division of the D. L. & W. R. R. at Scranton, Penna. 2000 w. Eng Rec—June 22, 1907. No. 85198.

### Pontoon.

A Floating Bridge with Arrangements for the Passage of Boats (Schwimmende Brücke mit Schiffsdurchlasz). R. Weyland. An illustrated description of a foot bridge over a canal at Stettin, Germany, one section of which can be drawn



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aside to allow boats to pass through. 3000 w. *Zeitschr d Ver Deutscher Ing*—June 29, 1907. No. 85682 D.

Quebec.

The Anchor Arms of the Quebec Bridge. Illustrates and describes important features in the design of the south anchor arm, completed this last summer. 2500 w. *Eng Rec*—Dec. 1, 1906. No. 80815.

Notes on the Fabrication of the Quebec Bridge. An account of work where great perfection must be attained and verified. 2000 w. *Eng Rec*—Dec. 15, 1906. No. 80996.

Adjustable Connection of Anchor-Arm Lateral System, Quebec Bridge. Illustrates and describes the adjustable connection of the lateral system in this arm. 1600 w. *Eng Rec*—Dec. 29, 1906. No. 81311.

The Anchor Pier Towers of the Quebec Bridge. Illustrates and describes the anchor pier towers, which are 84½ ft. high and 76 ft. wide at the base. 1200 w. *Eng Rec*—Jan. 12, 1907. No. 81574.

Erection Attachments for Bottom Chords and Vertical Posts of the Quebec Bridge. Illustrates and describes arrangements for handling and assembling the members, showing their efficiency in securing rapidity in erection. 2300 w. *Eng Rec*—Jan. 19, 1907. No. 81722.

Erection of the Main Vertical Posts of the Quebec Bridge. Illustrated description of one of the most difficult operations in building this span, the erection of these posts, which, with the bracing between them make a vent nearly 415 ft. high by 75 ft. wide over all, on the center line of the main pier. 2500 w. *Eng Rec*—Jan. 26, 1907. No. 81948.

Handling Eyebars at the Quebec Bridge. Illustrated description of the methods used in handling the large eyebars in this cantilever bridge. 2500 w. *Eng Rec*—Feb. 9, 1907. No. 82225.

The Traveler for the Erection of the Quebec Bridge. Illustrates and describes a traveler of the gantry type, much the largest ever built. 2500 w. *Eng Rec*—Feb. 23, 1907. No. 82521.

The Erection of the South Anchor Arm of the Quebec Bridge. The equipment of the traveler is illustrated and described and methods of erection explained. 2200 w. *Eng Rec*—March 2, 1907. No. 82731.

The Quebec Bridge Superstructure Details. Illustrated detailed description. 1000 w. *Eng Rec*—June 22, 1907. Serial 1st part. No. 85202.

The Suspended Falsework of the Can-

tilever Arms of the Quebec Bridge. Illustrated description of the suspended falsework used in the erection. 2000 w. *Eng Rec*—Sept. 21, 1907. No. 87154.

The Erection of the South Cantilever Arm of the Quebec Bridge. Illustrates and describes details of erection of the south cantilever arm, not previously published. 3500 w. *Eng Rec*—Sept. 28, 1907. No. 87308.

Progress of the Quebec Bridge Across the St. Lawrence River. Views showing the present condition of this cantilever structure, with brief notes. 300 w. *Eng News*—Jan. 17, 1907. No. 81666.

The Quebec Bridge. Gives illustrations showing the progress made on this great bridge across the St. Lawrence River, describing its general features. It will contain the largest span of any type hitherto constructed. 1200 w. *Engr, Lond*—Jan. 18, 1907. No. 81991 A.

The Quebec Bridge. Frank W. Skinner. An illustrated account of this important engineering work. Written previous to the disaster. 5700 w. *Engng*—Sept. 13, 1907. Serial. 1st part. No. 87210 A.

The Fall of the Quebec Cantilever Bridge. An illustrated article giving the facts about the structure and its collapse, so far as at present known, with interesting editorial. 10000 w. *Eng News*—Sept. 5, 1907. No. 86761.

The Fall of the Quebec Bridge. Gives drawings and essential data, illustration and editorial in regard to this failure. 6500 w. *Eng News*—Sept. 12, 1907. No. 87003.

The Fall of the Quebec Bridge. Editorial on two facts brought out recently which add to the information concerning the cause of the collapse. Drawings. 1500 w. *Eng News*—Sept. 19, 1907. No. 87117.

The Compression Members of the Quebec Bridge. Editorial discussion, with letters bearing on the Quebec disaster from engineers of prominence. 9000 w. *Eng News*—Oct. 3, 1907. No. 87424.

The Quebec Bridge Wreck. Folding plate, with notes. 1800 w. *Eng News*—Oct. 10, 1907. No. 87552.

Theodore Cooper on the Quebec Bridge and Its Failure. The official statement of the consulting engineer for the Quebec bridge, to the Canadian Investigating Commission. 11500 w. *Eng News*—Oct. 31, 1907. No. 87992.

The Quebec Bridge Disaster. An illustrated account of the collapse of this great cantilever bridge during construc-

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tion, with short discussion of the possible cause. 3000 w. Engng—Sept. 6, 1907. No. 87076 A.

The Fall of the Quebec Bridge. Illustrations with brief notes. 500 w. Engng—Sept. 13, 1907. No. 87214 A.

The Collapse of the Quebec Bridge. Frank W. Skinner. Gives results of personal observations at the site of the Quebec Bridge disaster, attributing the accident to bad design. Also long editorial. Ills. 6800 w. Engng—Sept. 20, 1907. No. 87342 A.

The Quebec Bridge. A brief illustrated description of this great cantilever structure, with editorial discussion of the collapse during construction. 4500 w. Engr, Lond—Sept. 6, 1907. No. 87082 A.

The Collapse of the Quebec Bridge. A statement of the facts thus far brought to light concerning this accident and the local conditions at the time. 5000 w. Eng Rec—Sept. 7, 1907. No. 86792.

The Quebec Bridge Disaster. An illustrated account of the fall of the cantilever bridge across the St. Lawrence, with editorial. 3500 w. Sci Am—Sept. 14, 1907. No. 86895.

The Quebec Bridge Collapse. An illustrated article, with report by H. M. McKay on the collapse of the steel superstructure. 1500 w. Ir Age—Sept. 5, 1907. No. 86746.

## Railway Curves.

Railway Bridges on Curves (Eisenbahnbrücken in Gleiskrümmungen). Leopold Orley. Mathematical and general discussion of stresses and design. 1st plate. 6500 w. Oest Wochenschr f. d. Oeff Baudienst—Oct. 20, 1906. No. 80612 D.

## Reconstruction.

Strengthening the Three-Hinged Arch Bridge Over the Mississippi River Between Minneapolis and St. Paul, Minn. Frank H. Constant. Drawing, illustration, and description of the reconstruction of this highway bridge to strengthen it to accommodate interurban cars on double track. 4500 w. Eng News—Feb. 14, 1907. No. 82290.

The Reconstruction of the Parkersburg Bridge on the Baltimore & Ohio R. R. The amount of traffic and increased weight of locomotives made it necessary to replace the channel spans of this bridge by stronger ones. Illustrates and describes the method of carrying out the work without interruption of traffic and obstruction of the river. 4500 w. Eng Rec—March 9, 1907. No. 82860.

Calf Killer Bridge, Nashville, Chatta-

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nooga & St. Louis Ry. Detailed description of methods used in rebuilding this bridge with reasons for the re-erection. 2000 w. Eng Rec—Sept. 28, 1907. No. 87305.

See also Blackfriars, Lattice Girder, Restoration, Steel, and Strengthening, under BRIDGES.

## Reinforced Concrete.

Reinforced Concrete Bridge Over the Cumberland River. Ward Baldwin. Illustrates and describes the method of construction. 500 w. R R Gaz—March 22, 1907. No. 83211.

The New Stanford Bridge, Worcestershire. Illustrated description of the longest-span ferro-concrete arch hitherto built in Great Britain. 2000 w. Engng—Aug. 23, 1907. No. 86727 A.

The Walnut Lane Bridge, Philadelphia. An unusually large and beautiful bridge of reinforced concrete construction is illustrated and described. It is designed for highway traffic. 1200 w. Eng Rec—Nov. 17, 1906. No. 80506.

Building the Washington Street Bridge in Dayton, Ohio. A reinforced concrete structure of the Melan arch type, with seven spans, is illustrated and its construction described. 2500 w. Eng Rec—March 2 1907. No. 82715.

The Kishwaukee River Bridge of the Elgin & Belvidere Electric Co. Illustrates and describes the construction of a ribbed concrete-steel bridge of four spans. 1300 w. Ry & Eng Rev—April 13, 1907. No. 83728.

The Highway Bridge Near Goshen, Ohio. Illustrated description of a five-span, arched, reinforced concrete bridge, 16 ft. wide and 493.5 ft. long, and its construction. 1600 w. Eng Rec—March 30, 1907. No. 83366.

The Factory Street Bridge in Canal Dover, Ohio. Edw. Stingel. Illustrated detailed description of a four-span arched reinforced concrete bridge of the Thacher type, crossing the Tuscarawas River and the Ohio Canal. 1500 w. Eng Rec—Feb. 9, 1907. No. 82221.

The Sandy Hill Bridge Over the Hudson River; A Long Reinforced-Concrete Arch Bridge with Block Facing. An illustrated article outlining methods used in the construction of a bridge of 15 equal arches. Good finish, economy and rapid work were secured. 7700 w. Eng News—May 9, 1907. No. 84290.

The Design of Economic Centers for a Reinforced Concrete Arch, the Cost of Same, and the Cost of Placing the Steel and the Concrete. Gives a description

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of methods and cost of constructing a reinforced concrete bridge, with an economical form of centering. 2800 w. Engng-Con—Jan. 23, 1907. No. 81757.

Concrete Arches with Old Rail Reinforcement. C. L. Slocum. Portion of a paper before the Conn. Soc. of Engrs. Discusses this form of construction, describing the type of arch used for street crossings over the New Haven cut at New Haven, Conn. Ills. 3000 w. Eng News—April 11, 1907. No. 83564.

Special Bridge Structures for the Track Elevation of the Chicago, Burlington & Quincy Ry. in Chicago. Illustrates and describes the construction of a number of street subway bridges having reinforced-concrete deck-girder floor slabs, built in sections at a distance from the site and afterwards set in place. 3500 w. Eng Rec—May 18, 1907. No. 84426.

Reinforced Concrete Railway Bridges. (Les Ponts de chemins de fer en ciment armé). Victor Forestier. Details of construction of bridges of this material recently constructed in France. Ills. 2300 w. Beton und Eisen—Nov., 1906. No. 81858 F.

Reinforced Concrete Arch Bridges (Bogenbrücke in Eisenbeton). Wilhelm Schnidtmann. Short description of a German railway bridge. Illus. 800 w. Deutsche Bauzeitung—Feb. 6, 1907. No. 82907 D.

Reinforced Concrete Structures on the New Austrian State Railways (Der Eisenbetonbau bei den neuen, durch die k. k. Eisenbahnbaudirektion hergestellten Bahnlinien der Oesterreichischen Monarchie). August Nowak. Description of railway and highway bridges and details of their construction. Illus. Serial. Parts II and III. 2200 w. Beton und Eisen—Jan. and Feb., 1907. No. 83601 each F.

The Reinforced-Concrete Railway Bridge Over the Rhone at Chippis (Eisenbahnbrücke in Armierter Beton über die Rhone bei Chippis.) Illustrates and describes the design and construction of this bridge in Switzerland. 3500 w. Serial. 2 parts. Schweiz Bau—June 22 and 29, 1907. No. 85638 each D.

The Wallstrasse Bridge in Ulm (Die Wallstrassenbrücke in Ulm a. D.). Herr Neuffer. Description of a reinforced concrete arch bridge of 215 ft. span. Illus. 2900 w. Serial. 3 parts. Deutsche Bauzeitung—Jan. 9 and 23, and Feb. 6, 1907. No. 82906 each D.

Reinforced Concrete Structures on the Kansas City Outer Belt & Electric Railroad. Walter W. Colpitts. Illustrates and describes culverts, abutments, bridges,

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etc. Map. 800 w. Ry Age—Aug. 2, 1907. No. 86121.

Three Light Reinforced-Concrete Arch Bridges at Venice, California. Paul H. Ehlers. Illustrated description of structures across a lagoon near Los Angeles, Cal., stating the conditions and restrictions. 800 w. Eng News—Aug. 29, 1907. No. 86636.

See also Abutments, Arches, Concrete Arches, Foundations, Hudson River, and Viaducts, under BRIDGES.

## Replacement.

Erection of the Lehighon Bridge of the Central R. R. of New Jersey. Illustrates and describes the erection of a double-track, through, riveted truss, skew span, to replace an old bridge, with as little interference as possible with traffic. 2500 w. Eng Rec—March 2, 1907. No. 82724.

Replacement of Bridges and Allied Structures. Herman K. Higgins. Considers the classification, inspection and the determination of when replacement is necessary, and the loads allowable. General discussion. 9000 w. Jour Assn of Engng Socs—March, 1907. No. 83766 C.

## Removal.

Removing a Historic Bridge. An illustrated account of the removal of 4-track swing bridge, near 175th St., New York City, carrying the tracks of the N. Y., N. H. & H. R. R., which is to be replaced by a 6-track Scherzer rolling lift bridge. 1500 w. Eng Rec—June 29, 1907. No. 85321.

Removing a Stone Arch Bridge Over the Northern Railway of France. Illustrates and describes methods used under difficult conditions. 800 w. Eng News—Aug. 1, 1907. No. 86078.

The Temporary Vauxhall Bridge. An illustrated account of the demolition of this structure which has spanned the Thames for the last ten years. 1500 w. Engr, Lond—April 26, 1907. No. 84258 A.

## Restoration.

The Auld Brig o' Ayr. An interesting account of restoration work to preserve this historic structure in Scotland. Ills. 3000 w. Engng—April 12, 1907. No. 83879 A.

## Rome.

The Victor Emmanuel Bridge Over the Tiber, at Rome (Die Viktor Emanuel Brücke über den Tiber in Rom). Julius Stanek. Abstract from "Annali della Società d. Ingegneri e d. Arch. Italiani," giving illustrated description of masonry

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## Skew

arch bridge. 2 plates. 1600 w. Oest Wochenschr f d Oeff Baudienst—Nov. 10, 1906. No. 80615 D.

## Skew.

Skew Bridge of Reinforced Concrete—Wabash Railroad. A bridge over the Sangamon River, near Decatur, Ill., is illustrated and described. 700 w. Ry Age—Sept. 6, 1907. No. 86800.

See also Newark, N. J., and Replacements, under BRIDGES.

## South Bend Ry.

Recent Bridge Structures on the South Bend & Southern Michigan Railway. Illustrates and describes types built on an interurban railway from South Bend, Ind., to St. Joseph, Mich. 1200 w. St Ry Jour—Dec. 15, 1906. No. 81041.

## Steel.

The Kafue River Bridge on the Cape to Cairo Railroad. Brief illustrated account of the longest bridge in Africa, a steel structure of the open-lattice girder type. 1200 w. Sci Am Sup—Sept. 28, 1907. No. 87254.

The Bridge over the Rhine between Ruhrort and Homburg (Die Strassenbrücke über den Rhein zwischen Ruhrort und Homburg). W. Dietz. The first part of the serial deals principally with the foundations for this steel structure. Ills. 4000 w. Serial. 1st part. Zeitschr d Ver Deutscher Ing—May 11, 1907. No. 84979 D.

The Railway Bridge over the Gorge of the Schwarzwasser (Die Eisenbahnbrücke über das Schwarzwassertobel). Fritz Ackermann. Gives details of this high, long-span, arch bridge. Ills. 1500 w. Schweiz Bau—May 11, 1907. No. 84964 B.

Renewing the 50-Metre Span Bridge at Kedoeng-Djattie on the Samarang-Vorstenlanden Railway (Vernieuwing der Vakwerkbrug van 50 M. dagwijdte te Kedoeng-Djattie in den Spoorweg Samarang-Vorstenlanden). Illustrates and describes the design and construction of this steel bridge in the East Indies. 4500 w. De Ingenieur—June 29, 1907. No. 85692 D.

The New Railway Bridge over the Neckar at Heidelberg (Die Neue Eisenbahnbrücke über den Neckar bei Heidelberg). G. Lucas, D. R. Müller and G. Trauer. The first part of the serial describes the foundation work for this four-span steel structure. Ills. 1000 w. Serial. 1st part. Deutsche Bau—July 6, 1907. No. 86253 D.

The Design of a Two-Hinged Spandrel-Braced Steel Arch. Ralph Freeman. Explains the methods of calculation and

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## Suspension

the general principles of the design of a two-hinged arch. 4800 w. Inst of Civ Engrs, No. 563. No. 84457 N.

Bridge Over the River Usk. Illustrated detailed description of a new bridge of pleasing design, near Abergavenny, England. 700 w. Engr, Lond—April 26, 1907. No. 84261 A.

The Oakland Bridge, Pittsburg, Pa.: A Steel Arch Without Hinges. Willis Whited. Illustrates and describes a no-hinge, long-span steel arch viaduct and the method of erection. 2000 w. Eng News—May 16, 1907. No. 84385.

The Proportioning of Steel Railway Bridge Members. Henry S. Prichard. Discusses the strength of structural steel, safe working stresses, rules for designing compression members, and provisions for live loads. 9500 w. Pro Engrs' Soc of W Penn—July, 1907. No. 86398 D.

See also Bearings, Blackwell's Island, Bronx, Cantilever, Connecticut River, Double Deck, Erecting Cosst, Girders, Guatemala, India, Lattice Girder, Lift Span, Mississippi, Missouri River, Natal, Newark, N. J., New York City, Nile, North Platte, Piers, Plate Girders, Quebec, Replacement, Reconstruction, South Bend Railway, Strengthening, Suspension, Susquehanna, Swing Bridges, Tubular Viaducts, and Zambesi, under BRIDGES.

## Strengthening.

Strengthening Girder Bridges on the Madras Railway. Edward W. Stoney. Describes methods used in strengthening or renewing a large number of girders with as little interruption to traffic as possible. Ills. 2200 w. Engng—March 29, 1907. No. 83554 A.

## Substructure.

The Substructure of the Dearborn Street Bridge, Chicago. Brief description of this bridge and of the character of the river bottom, which presents peculiarly difficult conditions, with illustrated description of cofferdams and construction work. 2500 w. Eng Rec—Sept. 14, 1907. No. 87024.

## Suspension.

Suspension Bridges. Brief illustrated descriptions of interesting types. 1500 w. Ry & Loc Engng—May, 1907. No. 84030 C.

The Monongahela River Suspension Bridge at Morgantown, W. Va. W. H. Boughton. A statement of the conditions found on a recent examination of this bridge, especially in regard to the cables. 1000 w. Eng News—April 18, 1907. No. 83894.

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The Design of Cable Suspension Bridges with no Guys. (*Calcul des Ponts Suspendus à Câble et sans Hauban.*) A. Paris. Mathematical discussion of a method for estimating the indeterminate stresses. Ill. 2300 w. Bull Tech Suisse Rom—March 25, 1907. No. 83699 D.

The Bridge "Humbert I" over the Po at Turin (*Il Ponte Umberto I sul Po a Torino*). F. Corradini. An illustrated description of the design and construction of this suspension bridge. Serial. 1st part. 1500 w. Il Monitore Tech—May 30, 1907. No. 84926 D.

An Eye-Bar Suspension Bridge over the Aare from the Knechteninseli in Bern (*Kettensteg über die Aare beim Knechteninseli in Bern*). F. Ackermann. An illustrated description of the design of a steel foot-bridge of 55 metres span. 1200 w. Schweiz Bau—Aug. 31, 1907. No. 86960 D.

## Susquehanna.

New Lehigh Valley Bridge Over the Susquehanna River, Near Towanda, Pa. Philip H. De Witt. An account of the improvement in alinement and grades between Towanda and Wysox, with illustrated description of the new bridge of 14 spans of deck plate girders. 1200 w. R R Gaz—Feb. 8, 1907. No. 82200.

A Long Plate-Girder Bridge and Grade and Alinement Changes on the Lehigh Valley R. R., at Towanda, Pa. Philip H. De Witt. Illustrated description of important improvements in progress. 1200 w. Eng News—March 14, 1907. No. 83130.

The New Lehigh Valley Bridge Over the Susquehanna River, Near Towanda, Pa. Illustrates and describes a 14-span bridge built in connection with railroad improvements at this point. 1200 w. Eng Rec—March 2, 1907. No. 82737.

## Swing Bridges.

Design of Swing Bridges from a Maintenance Standpoint. C. H. Cartlidge and discussion. More of a symposium than the regular form of a paper and discussion, considering the subject from the operating and maintenance standpoint. Illus. 2400 w. Jour W Soc of Engrs—Feb., 1907. No. 83184 D.

The Double-Deck Swing Bridge at the Upper Harbor at Hamburg (*Pont Tourant à deux Etages sur le Port Supérieur de Hambourg*). A. Bidault des Chaux. Illustrated description of this large steel bridge, the upper deck of which carries four lines of rails and the lower is arranged for vehicular and foot traffic. 3000 w. Génie Civil—July 6, 1907. No. 86209 D.

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See also Movable, Nile, Pontoon, and Removal, under BRIDGES.

## Terminals.

See Brooklyn, under BRIDGES.

## Timber.

Early Wooden Bridges. Illustrates and describes early forms of wooden bridges. The Burr bridge, the Howe truss bridge, etc. 800 w. Ry & Loc Eng—Aug., 1907. No. 86043 C.

The Long Bridge Across the Potomac at Washington, D. C. Photographs and brief description of one of the oldest timber Howe truss bridges in America, built in 1809 first, and rebuilt in 1834, and repaired more recently. It is now being removed. 700 w. Eng News—March 14, 1907. No. 83138.

The Design of Timber Howe Trusses. R. Balfour. Gives a typical design for a ten-panel, 150-ft. span, Howe truss, single-track railway bridge, 25-ft. between lower and upper chords and 16-ft. clear width, explaining the variations from usual practice. 1000 w. Eng News—Aug. 29, 1907. No. 86632.

## Transporter-Bridge.

The Widnes and Runcorn Transporter-Bridge. John James Webster. Illustrated detailed description of this bridge and its equipment, methods of erection and cost. Abstract of discussion. Plates. 31000 w. Inst of Civ Engrs—No. 3534. No. 80534 N.

## Trestles.

A Pile Trestle Erected with a Pivotal Pile-Driver. R. Balfour. Illustrates and describes a pivotal pile-driver and its use. 1000 w. Eng News—Aug. 15, 1907. No. 86389.

Hints on the Design and Construction of Wooden Trestles. R. Balfour. Briefly considers the conditions under which the timber has to do its work, and gives designs, discussing their construction. 1200 w. Eng News—June 6, 1907. No. 84814.

## Tubular.

Tubular Bridges. Illustrates and describes famous bridges of this design. 1500 w. Ry & Loc Engng—June, 1907. No. 84772 C.

## Viaducts.

The Las Vacas Viaduct on the Guatemala Railway. A single-track 3 ft. gauge structure 743 ft. long and 229 ft. high is illustrated and described in detail. 1500 w. Eng Rec—Jan. 26, 1907. No. 81951.

The Erection of the Las Vacas Viaduct,

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Guatemala Railway. Drawings and description of methods used in erecting the steel work of the second tower, spans, etc. 2200 w. Eng Rec—Feb. 2, 1907. No. 82106.

The Erection of Las Vacas Viaduct. An illustrated article describing methods used in erecting the narrow gauge single track viaduct on the Guatemala Ry. 2000 w. Eng Rec—Sept. 14, 1907. No. 87029.

Viaducts on the Guatemala Ry. at Rodeo and Station 1132. Illustrates and describes the special features of these viaducts. 1200 w. Eng Rec—Feb. 16, 1907. No. 82415.

Erection of El Rodes Viaduct, Guatemala Railway. Illustrates and describes the methods of erection. 1600 w. Eng Rec—March 2, 1907. No. 82723.

Reinforced Concrete Approaches and Column Footings of a Steel Viaduct at Kansas City. Kenneth Hartley. Illustrates and describes novel methods of avoiding underground obstruction. 700 w. Eng News—Jan. 31, 1907. No. 82027.

The Sixth Street Viaduct at Kansas City. J. A. Lahmer. Illustrated detailed description of the viaduct extending from Sixth and Bluff streets in Kansas City, Mo., to Fourth street and Minnesota avenue in Kansas City, Kan. 2200 w. R R Gaz—April 12, 1907. No. 83575.

The New Steel Viaduct Between Kansas City, Mo., and Kansas City, Kan. Extruded detailed description of this recently completed work. 4500 w. Eng News—Sept. 26, 1907. No. 87243.

Competitive Designs for a Reinforced-Concrete Viaduct in Milwaukee, Wis. Illustrated descriptions of two notable designs, for which prizes were awarded, for a long viaduct over the Menomonee Valley; one a Melan arch, the other a hooped-rib arch. 4000 w. Eng News—Feb. 14, 1907. No. 82293.

The First Prize Design for the Grand Ave. Viaduct, Milwaukee. States the requirements of the competitive designs and illustrates the first prize design for a concrete structure to carry Grand Ave. across the Menomonee Valley. 1200 w. Eng Rec—Feb. 9, 1907. No. 82223.

The Reinforced Concrete Viaduct of the Richmond & Chesapeake Bay Railway at Richmond. Illustrated detailed description of this structure and its construction, with information relating to the work. 2500 w. Eng Rec—March 2, 1907. No. 82708.

The Reinforced Concrete Viaduct of the Richmond & Chesapeake Bay Railway at Richmond. Illustrated description of

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## Viaducts

a viaduct to carry a single-phase line for freight and passenger service, 2000 w. St Ry Jour—March 30, 1907. No. 83360.

Reinforced Concrete Viaduct—Richmond & Chesapeake Bay Railway. Illustrated detailed description of a viaduct of unusual type, being built on an electric line in Virginia. The Kahn system of reinforcing is used. 1400 w. Ry Age—Sept. 27, 1907. No. 87287.

Test of the Reinforced Concrete Viaduct of the Richmond & Chesapeake Bay Ry. An illustrated account of the tests made of a viaduct designed for a train of cars each weighing 150,000 lbs., with a factor of safety of 4. 1000 w. Eng Rec—Sept. 21, 1907. No. 87156.

The Moodna Creek Viaduct, Erie R. R. Plan and description of a viaduct designed for a double-track superstructure. 2500 w. Eng Rec—July 6, 1907. No. 85455.

The Erection of the Moodna Creek Viaduct. Illustrates and describes the overhead traveler used which is of rather peculiar construction. 2000 w. Eng Rec—Oct. 26, 1907. No. 87936.

Concrete Viaduct. Illustrated description of the Santa Ana arched viaduct in California. No steel nor stone masonry was used in its construction. 1000 w. Ry & Loc Engng—Nov. 1906. No. 80225 C.

The George's Creek Viaduct, Southern Ry. A single-track plate girder structure about 398 ft. long and 40 ft. high, near Greenville, S. C., is illustrated and described. 500 w. Eng Rec—Jan. 12, 1907. No. 81583.

The Jacksonville Viaduct. A reinforced-concrete structure 845 ft. long and 60 ft. wide, carrying a highway, two street-car tracks, and two sidewalks, is illustrated and described. 1800 w. Eng Rec—May 18, 1907. No. 84428.

Cost of Erecting Three Steel Viaducts of 500 ft., 580 ft., 1170 ft. Length, with Summaries of Costs of Labor and Materials and New Formula for Computing the Weight of Viaducts. 3000 w. Engng-Con—June 19, 1907. No. 85144.

Brush Creek Viaduct on the Alabama Western-Birmingham Extension of the Illinois Central. Views, plan and description of a viaduct near Haleyville, consisting of 75-ft. deck plate girder spans, 9 towers with 40-ft. deck plate girder span and two 60-ft. deck plate girder approaches. 800 w. Ry Age—July 26, 1907. No. 85968.

The Nelson Street Viaduct at Atlanta. Illustrated description of a reinforced concrete structure of ten flat arch spans.

## CIVIL ENGINEERING

### Viaducts

1000 w. Eng Rec—Oct. 12, 1907. No. 87570.

The Genesee River Viaduct, Erie R. R. Illustrated detailed description of a viaduct with a steel plate girder superstructure, 3,121 ft. long and about 120 ft. in height from the water level. 1200 w. Eng Rec—Aug. 31, 1907. No. 86692.

The Breydon Viaduct at Great Yarmouth. William Marriott and Theodore Graham Gribble. *Pro. Inst. of Civ. Engrs.* Illustrated detailed description of the construction of a steel viaduct of five spans over the estuary of the River Yare, called Breydon Water. 4500 w. Bul Int Ry Cong—Jan., 1907. No. 82546 E.

Armored Concrete Viaduct at Deurne-Merxem. Illustrated detailed description of a structure near Antwerp, constructed on the Hennebique system. 2500 w. Engr, Lond—Aug. 16, 1907. No. 86603 A.

Ferro-Concrete Viaduct for the Cala Mineral Railway, Seville. Mateo Clark. Explains the conditions, and gives an illustrated description of the construction. 2000 w. Engng—Oct. 18, 1907. No. 87957 A.

Curved Girder Approach Viaduct of the Austerlitz Bridge Over the Seine. R. Bonnin. A statement of the essential difference between the curved girder and the straight girder, pointing out the ad-

### CONSTRUCTION

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ditional forces to which the former is subjected. An appendix gives a general theory of curved girders. Ills. 2000 w. Eng News—Aug. 15, 1907. No. 86386.

Reconstruction of the Amsterdam Viaduct (De vernieuwing van de Westelyke Viaduct te Amsterdam). C. Leemans. Illus. 7500 w. Serial. 1st part. *De Ingenieur*—Feb. 2, 1907. No. 82957 D.

See also Guatemala, Reinforced Concrete, Steel, and Viaduct Cost, under BRIDGES.

### Viaduct Cost.

Graphical Determination of the Most Economical Method of Crossing a Valley (Zeichnerische Bestimmung der Wirtschaftlichste Anordnung einer Talübersetzung). Dr. Robert Schönhöfer. Comparison of costs of different kinds of viaducts by means of diagrams. 1 plate. 1200 w. *Oest Wochenschr f d Oeff Baudienst*—Oct. 27, 1906. No. 80613 D.

### Williamsburg.

See New York City, under BRIDGES.

### Zambesi.

Zambesi River Bridge. Illustrated description of the great steel arch on the Cape-to-Cairo railway in Africa, and the method of construction. 2000 w. *Ry & Loc Engng*—Jan., 1907. No. 81444 C.

## CONSTRUCTION

### Anchorage.

The Anchorages of the Singer Building Tower. Illustrates and describes the vertical steel anchorages for the tower, 612 ft. above the curb, built in as the concrete was made, in such a manner as to utilize the full weight of the pier. 1200 w. Eng Rec—May 4, 1907. No. 84221.

### Arches.

The Application of the Elastic Theory to Certain Forms of Arch. A letter from R. C. Barnett on the application of the elastic theory to arch analysis. 1200 w. Eng News—Aug. 1, 1907. No. 86080.

Empirical Design of Reinforced Arches. Daniel B. Luten. Brief explanation of an empirical method based on the elastic theory devised by the writer. Ills. 1000 w. *Purdue Engng Rev*—1907. No. 85942 N.

The Symmetrical Masonry Arch; Analysis According to the Elastic Theory. Malverd A. Howe. An explanation of a method of determining the safety. 1200 w. *R R Gaz*—July 26, 1907. No. 85903.

Symmetrical Masonry Arches—Coeffi-

cients for Reactions and Moments at the Supports. Malverd A. Howe. Gives an analysis of stresses, and methods of finding the moments at the supports and coefficients. 1200 w. *R R Gaz*—Aug. 30, 1907. No. 86662.

See also same title, under BRIDGES.

### Automobile Shops.

The Cadillac and Packard Automobile Shops of Reinforced Concrete. A 90x300 ft. factory building, having three floors and a basement, recently completed in Detroit, Mich., is illustrated and described. 1700 w. Eng Rec—Nov. 17, 1906. No. 80507.

### Baths.

Swimming Pools. Jno. K. Allen. Considers the design and construction. Ills. 1200 w. *Dom Engng*—Feb. 16, 1907. Serial. 1st part. No. 82419.

See Reinforced Concrete, under CONSTRUCTION.

### Bathhouse.

New Bathhouse of the City of Hanover. (Die neue Städtische Badeanstalt

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## Beams

in Hannover.) E. Stack. Description of a large German bathing establishment, with details of construction, heat supply, etc. Ills. 4700 w. Gesundheits Ingenieur—March 2, 1907. No. 83641 D.

## Beams.

Diagrams for the Design of Reinforced Concrete Beams. Gives diagrams drawn by F. Teichman, with statement of their make-up and use. 2500 w. Eng News—July 11, 1907. No. 85571.

The Calculation of the Stresses in a Fixed Rod Subjected to both Compression and Bending (Der Eingespannte, auf Druck und Biegung beanspruchte Stab). Ivan Arnovlevic. Mathematical paper with diagrams and tables. 10000 w. Oesterr Wochenschr f d Oeffent Bau—June 1, 1907. No. 85673 D.

Calculation of Reinforced-Concrete Rib Beams of the Lowest and Most Favorable Height (Berechnung der Rippenbalken aus Eisenbeton von Niedrigster und Vorteilhaftester Höhe). Prof. Ramisch. Mathematical paper. 2000 w. Serial. 1st part. Elektrotech u Polytech Rundschau—June 26, 1907. No. 85647 D.

Strain in Beams of Rectangular Section with Curved Axes (Die Anstrengung Stabförmiger Träger mit Gekrümmter Mittellinie). Carl Pfeiderer. A mathematical paper in extension of a previous paper in the same publication. Ills. 3600 w. Zeitschr d Ver Deutscher Ing—Sept. 21, 1907. No. 87652 D.

See also same title, under MATERIALS OF CONSTRUCTION, and under MEASUREMENT.

## Beam Deflection.

The Calculation of the Deflection of Beams by Graphical Integration (Le Calcul des Flèches des Poutres par l'Intégration Graphique). E. Aragon. A theoretical and mathematical description of the method. Ills. 7000 w. Serial. 2 parts. Génie Civil—Aug. 17 and 24. No. 86927 each D.

## Borings.

Cost of Earth Auger Borings on the New York State Barge Canal. Emile Low. Gives data relative to borings made with fence post hole diggers, or "earth augers," with which some 450 test holes were dug on Section 5. 400 w. Eng News—March 21, 1907. No. 83202.

Cost of Wash Drill Borings on the Deep Waterways Surveys, 1879 to 1900. An account of the borings made on the Deep Waterways between the Great Lakes and the Atlantic Tide Waters during 1897 and 1900. Also wash borings for the Rapid Transit commission, New

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York City. 2800 w. Eng News—Jan. 17, 1907. No. 81668.

Wash Drill Borings on the New York State Barge Canal. Emile Low. An illustrated account of the methods employed in making borings on the work named, with the cost. 2700 w. Eng News—Jan. 17, 1907. No. 81667.

Methods and Cost of Making Wash Drill Borings on the Great Lakes and Atlantic Ship Canal Survey. A summary of facts given regarding the methods and costs of making wash borings in surveying the possible routes for the proposed ship canal connecting the Great Lakes with Atlantic tide waters. 1700 w. Engng-Con—March 27, 1907. No. 83275.

Methods and Cost of Making Diamond Drill Borings, Deep Waterways Survey, Great Lakes to Atlantic Tide Waters. Gives a record of diamond drill borings of shallow depths, the methods and cost. 1500 w. Engng-Con—March 13, 1907. No. 82868.

See also same title, under WATERWAYS AND HARBORS.

## Breakwaters.

Stone Breakwater Construction at Huron, Ohio. Wilson T. Howe. Describes an example of the modification that has taken place in stone breakwater construction. Ills. 1000 w. Eng News—Aug. 22, 1907. No. 86508.

## Buildings.

Modern Steel Buildings. John M. Ewen. Read before the School of Prac. Science, Toronto. On modern steel-frame buildings and their construction. 3500 w. Can Archt—April, 1907. Serial. 1st part. No. 83971 C.

The Design and Construction of Industrial Buildings. D. C. Newman Collins. An illustrated article discussing materials and methods representing the most recent practice. 7000 w. Engineering Magazine—Sept., 1907. No. 86610 B.

Structural Details of the Holy Angels School, Buffalo. An example of reinforced concrete construction combined with brick and stone walls is illustrated and described. 2000 w. Eng Rec—April 20, 1907. No. 83835.

The Salvation Army Building, New York. Describes the system of self-supporting reinforcement used in the erection of this fireproof six-story structure. Ills. 1800 w. Eng Rec—June 22, 1907. No. 85203.

The Calvary Cemetery Mortuary Chapel. A structure to cost about \$200,000, mainly of concrete construction, and hav-



## CIVIL ENGINEERING

### Buildings

ing architectural features of interest is illustrated and described. 1500 w. Eng Rec—Aug. 3, 1907. No. 86090.

The Construction of the Trinity and United States Realty Buildings, New York. Illustrated detailed description of somewhat unusual work carried out in this congested district of New York City. 3800 w. Eng Rec—March 2, 1907. No. 82736.

Structural Details in the Plaza Hotel, New York. Illustrates and describes interesting details in this 18-story, steel cage hotel, facing Central Park. 2200 w. Eng Rec—March 30, 1907. No. 83371.

Providence Armory Drill Hall. Illustrates and describes the construction of a 235 x 170 ft. steel drill hall, 70 ft. in extreme height. 1800 w. Eng Rec—April 13, 1907. No. 83711.

The Baltimore & Ohio Office Building, Baltimore. Describes the construction of a 13-story and basement building, giving typical beam plan and details. 3000 w. Eng Rec—June 1, 1907. No. 84703.

Erection of the City Investing Company's Building. Illustrated description of the erection of a 32-story steel-cage building in New York City. 2000 w. Eng Rec—June 15, 1907. No. 85055.

The Construction of the Trust Company of America Building, New York. Illustrated description of methods of erection used in advanced fireproof steel cage construction. 3300 w. Eng Rec—June 22, 1907. No. 85205.

The Hudson Companies' Building, New York. Plans and description of construction details of this large terminal station, occupying two city blocks in New York. 2500 w. Eng Rec—Aug. 3, 1907. No. 86088.

Structural Details of the Scribner Press Building. Interesting details of a 15 story building in New York city are illustrated and described. 900 w. Eng Rec—Jan. 5, 1907. No. 81493.

The Construction of the New York Central Office Building, New York. Describes a steel-cage, fire-proof, 20-story building of special design. Ills. 2500 w. Eng Rec—Aug. 24, 1907. No. 86557.

Structural Details in the Singer Building, New York. Illustrates and describes details of columns which support the superstructure; also wind bracing details, and other interesting work. 2800 w. Eng Rec—May 18, 1907. No. 84427.

Steel Details in the Upper Part of the Singer Building Tower. Illustrated description of dome, beam and floor framing. 1800 w. Eng Rec—May 25, 1907. No. 84567.

### CONSTRUCTION

### Coal Pockets

See also Anchorages, Automobile Shops, Concrete, Concrete Blocks, Earthquakes, Factories, Failures, Fireproof, Floors, Foundations, Hotels, Reconstruction, Reinforced Concrete, Roofs, San Francisco, Stables, Steel Buildings, Stresses, Theatre, Towers, Warehouse, and Wind Pressure, under CONSTRUCTION.

### Caissons.

Righting a Capsized Lighthouse Caisson, Stuart Stevens Scott. An illustrated account of an engineering feat in Chesapeake Bay in connection with the foundation work for the "Baltimore Light." 1000 w. Sci Am—Dec. 15, 1906. No. 80973.

The Equilibrium of Floating or Immersed Vessels Filled with Compressed Air (*Equilibre des Appareils Flottants ou Immergés renfermant de l'Air Comprimé*). Edmond Henry. A mathematical discussion referring particularly to caissons, diving bells and other construction devices. Ills. Génie Civil—May 25, 1907. No. 84910 D.

See also same title, under BRIDGES; and Foundations, under CONSTRUCTION.

### Cement.

The Regulation and Control of Cement Construction. E. S. Larned. A discussion of the use of cement blocks with suggestions for specifications and uniform instructions. 3500 w. Cement—Sept., 1907. No. 87398 C.

See also same title, under MATERIALS OF CONSTRUCTION.

### Checking.

The Checking of Structural Steel Deliveries for Mill Buildings. F. L. Smith. Outlines the methods tried of checking the delivery of material and the inspection necessary to correct defects or inaccuracies before erection. 1600 w. Eng Rec—March 2, 1907. No. 82719.

### Chimneys.

Chimney Construction. Illustrates and describes types of chimneys, discussing their foundation, lining, stability, and minor details. 3500 w. Engr, U S A—Feb. 1, 1907. No. 82100 C.

### Chimney Collapse.

Fall of a 150-Ft. Reinforced Tile-and-Concrete Chimney at La Crosse, Wis. An illustrated account by W. E. Miller, with information from several other sources. 2000 w. Eng News—Sept. 5, 1907. No. 86760.

### Coal Pockets.

See Reinforced Concrete, under CONSTRUCTION.

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## Coaling Tower

### Coaling Tower.

The Coaling Tower of the New Water-side Station, New York. Illustrated detailed description of arrangements for handling 300 tons of hard coal per hour, and the construction of the tower. 5600 w. Eng Rec—Jan. 19, 1907. No. 81719.

### Cofferdams.

A Plan for Building Cofferdams for River Piers. C. P. Howard. Describes a breakwater or "current deadener" used with success in constructing piers of bridges in running streams where cofferdams are necessary. Ills. 1200 w. Eng News—Nov. 29, 1906. No. 80768.

Difficult Cofferdam Work on Decomposed Rocks. Describes work at the foot of East 116th St. on the Harlem River, New York City, where troublesome conditions were overcome by simple expedients. 1200 w. Eng Rec—July 13, 1907. No. 85539.

See also same title, under BRIDGES; and Concrete, under CONSTRUCTION.

### Columns.

Column Formulas in Relation to the Practical Column. An editorial discussion of column formulas and design, for the purpose of showing how a rational column theory may be grounded. 7500 w. Eng News—Jan. 3, 1907. No. 81378.

Reinforced-Concrete Columns. Gives types of such columns, with notes on the assumptions used in their design, showing what has already been done. 2200 w. Engr, Lond—April 19, 1907. No. 84005 A.

Imperfect Butt-Joints in Columns, and Stresses in Lattice-Bars. Henry S. Prichard. Gives an analysis of the bending stresses so produced, illustrating by problems. 2000 w. Eng News—Oct. 3, 1907. No. 87425.

Heavy Columns in the Metropolitan Tower, New York. Describes the treatment in the design of the cross sections, details and connections of the principal columns for this structure which is to have a height of 668 ft. above the sidewalk. Ills. 1000 w. Eng Rec—July 13, 1907. No. 85540.

Earth Pressure of Column Foundations. (Der Bodendruck der Säulenfundamente). Adolf Francke. Mathematical discussion with diagrams. 5500 w. Oesterr Wochenschr f d Oeffent Bau—June 8, 1907. No. 85674 D.

See also same title, under MEASUREMENT.

### Concrete.

Reclaiming the Deserts by Concrete. Day Allen Willey. Describes the great

## CONSTRUCTION

## Concrete

irrigation works under construction in Nevada and Arizona, which include concrete dams, channels, and tunnels at a cost of millions. Ills. 1500 w. Cement Age—Nov, 1906. No. 80416.

A Surface Finish for Concrete. Henry H. Quimby. Describes the writer's method of obtaining an artistic concrete surface, giving illustrations showing the variety obtained with different aggregates. 1400 w. Cement Age—Nov., 1906. No. 80417.

Practical Hints for Concrete Constructors. W. J. Douglas. Discusses methods of design and supervision necessary to attain first class work. 12000 w. Eng News—Dec. 20, 1906. No. 81078.

Treatment of Concrete for Residential Purposes. Albert Moyer. Suggestions for obtaining the best results. 3500 w. Cement Age—Dec., 1906. No. 80948.

The Treatment of Concrete Surfaces. Linn White. Abstract of a paper read before the Assn. of Cement Users. Describes some methods used in trying to obtain satisfactory surfaces in the various classes of concrete work done in South Park System of Chicago. 1800 w. Eng News—Jan. 17, 1907. No. 81671.

The Artistic Treatment of Concrete. A. O. Elzner. A discussion of the possibilities of this material from the æsthetic point of view. 2000 w. Eng Rec—Jan. 12, 1907. No. 81579.

Concrete in Construction. Address by Edward T. Cairus before the Insurance Society of New York. Considers various processes of making and utilizing the material, with observations on fire tests of reinforced-concrete beams. 7400 w. Ins Engng—Feb., 1907. No. 82618 C.

A Concrete House in the Jamaica Earthquake. Illustrates and describes the concrete building which successfully withstood the shock. 2500 w. Cement Age—March, 1907. No. 83162.

Forms for Concrete Construction. Sanford E. Thompson. Read before the Nat. Assn. of Cement Users. Treats of the design, construction and removal of forms. Ills. 3300 w. Sci Am Sup—April 27, 1907. No. 83917.

Forms for Concrete Construction. Sanford E. Thompson. Abstract of a paper read before the Nat. Assn. of Cement Users, giving details of form construction, and the time to remove forms. 1500 w. Eng News—Jan. 24, 1907. No. 81768.

Expansion Joints in Concrete Structures, with Special Reference to Block Construction in Drydocks and Reservoirs. L. F. Bellinger. Explains an ap-

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## Concrete

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proximate method of computing the amount of steel necessary to take up the thermal and shrinkage stresses, giving examples of contraction and expansion, and presents a proposed system of block construction. 5500 w. Eng News—May 2, 1907. No. 84040.

The Commercial Value of Shop Drawings for Concrete Structures. Shows the importance of careful preparation of shop drawings and the setting plans, and their value in saving time and material. 2500 w. Munic Engng—May, 1907. No. 84,046 C.

Progress in Construction of Concrete Country Houses. Benjamin A. Howes. Discusses recent applications of this material to the economical construction of attractive and satisfactory homes. Ills. 1800 w. Cement Age—June, 1907. No. 85267 C.

Some Details of Concrete Construction. L. J. Hotchkiss. Illustrates and describes some of the methods used on recent work 7500 w. Jour W Soc of Engrs—June, 1907. No. 85724 D.

The Chateau des Beaux-Arts on Huntington Bay. Illustrated description of extensive use of concrete in the construction of a summer resort on the south shore of Long Island. 3000 w. Eng Rec—Aug. 17, 1907. No. 86423.

How to Prevent Failure in Concrete Construction. Dr. W. Michaelis, Jr. Gives the writer's views on the merits and limitations of cement and concrete and on the causes of failure in concrete construction, with suggestions for the prevention of such failures. 9000 w. Jour W Soc of Engrs—Aug., 1907. No. 87138 D.

Concrete Construction. E. S. Larned. Read before the Am. Portland Cement Mfrs. Discusses its regulation and control. 3500 w. Ir Age—Oct. 10, 1907. No. 87537.

Sound Concrete Construction. J. T. Noble Anderson. Information based on experience. 2800 w. Engr, Lond—Oct. 4, 1907. Serial. 1st part. No. 87595 A.

See also Concrete, Concrete Arches, Foundations, and Reinforced Concrete, under BRIDGES; Buildings, Foundations, Perrons, Reinforced Concrete, Tunnel Lining, and Waterproofing, under CONSTRUCTION; Concrete, under MATERIALS OF CONSTRUCTION; Pavements, under MUNICIPAL;; Wells, under WATER SUPPLY; and Coast Protection, Breakwater, and Piers, under WATERWAYS AND HARBORS.

## Concrete Blocks.

Concrete Building Block Walls. Noyes F. Palmer. Discusses methods used in

successful concrete building block construction. Ills. 2200 w. Cement Age—Dec., 1906. No. 80949.

Concrete Block Construction for Residences, Methods and Costs. Noyes F. Palmer. Discusses concrete block construction in general and also a particular residence at Quogue, Long Island. 2000 w. Engng-Con—March 6, 1907. No. 82783.

## Concrete Piers.

The Cost of a Cofferdam and Concrete Pier on Pile Foundation. Briefly describes the work, giving analysis of cost. 1400 w. Engng-Con—May 29, 1907. No. 84664.

Cost of Concrete Superstructure, West Pier, Charlotte Harbor, N. Y. Gives illustration showing the adopted design, and the cost of the work as given in the report of the Chief of Engineers of the U. S. Army. 1000 w. Eng News—Nov. 15, 1906. No. 80449.

## Concrete Piling.

Artificial Support for Buildings by Means of Concrete Piling. (Künstliche Befestigung des Baubodens mittels Schwebender Pilotage.) Ottokar Stern. Calculations and dimensions for concrete piling. Ills. 2300 w. Beton und Eisen—Jan., 1907. No. 83600 F.

Concrete Pile Foundations for a Tower 700 Feet High. Describes foundation work at Coney Island, N. Y., for a steel structure intended for amusement purposes. Ills. 1600 w. Eng Rec—April 27, 1907. No. 83950.

## Concrete Pipe.

Methods and Cost of Constructing a Reinforced Concrete Pipe for Carrying Water Under Pressure. Chester Wason Smith. Describes the construction of about 6,000 ft. of reinforced concrete pipe for carrying water under pressure, giving results attained and cost. Ills. 3000 w. Engng-Con—Sept. 11, 1907. Serial. 1st part. No. 86894.

Reinforced Concrete Pipe for Carrying Water Under Pressure. Chester Wason Smith. Describes the construction of about 6,000 ft. of pipe intended to carry water under pressure; also gives results and figures of cost. Ills. 4500 w. Pro Am Soc of Civ Engrs—Aug., 1907. No. 86639 E.

## Concrete Towers.

Reinforced Concrete Towers. D. W. Krellwitz. Illustrates and describes the reinforced-concrete towers, 142 feet high, built to carry a transmission line across the Welland Canal, near St. Catharines,

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## Contractor's Plant

Ontario. 1500 w. Pro Am Soc of Civ Engrs—Aug., 1907. No. 86638 E.

## Contractor's Plant.

The Contractor's Plant Used in Constructing the Montgomery Ward Building, Chicago. Outlines the conditions under which an 8-story reinforced-concrete building was constructed, in restricted location, illustrating and describing the plant for carrying on the work. 3800 w. Eng Rec—May 11, 1907. No. 84321.

Contractors' Plant for Constructing the Reinforced Concrete Warehouse of Montgomery Ward & Co., Chicago, Ill. Illustrated description of a field plant for handling and working up 7,500 tons of reinforcing steel and 4,000,000 ft. B. M. of form lumber, and for mixing and laying 125,000 cu. yds. of concrete. 2200 w. Engng-Con—May 29, 1907. No. 84663.

The Contractor's Plant and Methods Used on the Minidoka Irrigation Project. Outlines this work in southern Idaho, giving an illustrated description of methods employed. 2800 w. Eng Rec—June 22, 1907. No. 85201.

Rapid Blast Furnace Foundation Work. Charles M. Ripley. Illustrated detailed description of the contractor's plant for constructing the foundations for the 10 blast furnaces of a new steel plant at Aliquippa Park, Pa. 2500 w. Ir Age—July 25, 1907. No. 85878.

An Unusual Plant for Constructing a Submarine Tunnel at Chicago. Illustrated description of a plant used in connection with the construction of the lake section of a new tunnel for the water-works system. An aerial tramway is a special feature. 5500 w. Eng Rec—Oct. 26, 1907. No. 87935.

See also Anchorages, under BRIDGES.

## Contracts.

Engineers' Contracts and Specifications from a Contractor's Point of View. James W. Rollins, Jr. Especially discusses the contract as a mutual understanding, and the troubles arising on account of badly-drawn specifications. General discussion. 25000 w. Jour Assn of Engng Socs—July, 1907. No. 86395 C.

## Country Houses.

The Engineering of a Country House. Illustrated detailed description of work carried out on a beautiful estate in Surrey, about 24 miles from London, which aimed to equip the estate with all modern applications of sanitary science and electric lighting. 4500 w. Engr, Lond—March 8, 1907. Serial. 1st part. No. 83119 A.

## CONSTRUCTION

### Culverts.

The Ouseburn Culvert. Illustrates and describes an interesting engineering work in progress at Newcastle-on-Tyne. It consists in culverting the Ouseburn and filling up the valley to improve the communication between Newcastle and Heaton. 1200 w. Engr, Lond—Nov. 2, 1906. No. 80361 A.

A Novel Engineering Achievement—Burying a River to a Depth of 120 Feet. Illustrated description of the work of culverting the Ouseburn River, at Newcastle-on-Tyne, and filling the valley, to improve the connection with Heaton. 1200 w. Sci Am Sup—Feb. 9, 1907. No. 82179.

Design of Reinforced Concrete Structures—Flat Top Culverts. Walter W. Colpitts. The present article discusses the design of flat top culverts on the Kansas City Outer Belt & Electric R. R. 2800 w. Ry Age—Aug. 16, 1907. Serial. 1st part. No. 86438.

Concrete Pipe Culverts. O. P. Chamberlain, with discussion. Considers the possibilities of this type of culverts. Ills. 7500 w. Jour W Soc Engrs—Feb., 1907. No. 83185 D.

### Dams.

See same title, under WATER SUPPLY.

### Demolition.

The Demolition of the Great Wheel. An illustrated account of the methods used in this difficult and interesting engineering work. Plate. 3500 w. Engng—April 26, 1907. No. 84252 A.

### Drainage.

Drainage of the Vrana Lowlands. (Die Entsumpfung der Niederung von Vrana). Leopold Arndt. Account of improvement works and drainage canals. Illus. 5500 w. Osterreichische Wochenschrift für das Öffentlichen Baudienst—Dec. 8, 1906. No. 81841 D.

### Drills.

Well Drills for Blast Holes on the Panama Canal. An illustrated account of work done by the use of well drills, air driven. 1700 w. Compressed Air—May, 1907. No. 84533.

The Rock Drill and Its Share in the Development of New York City. Frank Richards. A fully illustrated article showing the value of the work of the rock drill in New York. 3500 w. Casier's Mag—June, 1907. No. 85184 B.

### Earth Pressures.

The Bracing of Trenches and Tunnels, with Practical Formulas for Earth Pressures. J. C. Meem. Treats of the

# CIVIL ENGINEERING

## Earthquakes

sheathing and bracing of trenches and tunnels in dry and water-bearing strata. Ills. 6000 w. *Pro Am Soc of Civ Engrs*—Aug., 1907. No. 86640 E.

## Earthquakes.

**Building in Earthquake Countries.** M. Montessus de Ballore. Considers the principles governing the art of building in countries subject to earthquakes. 1700 w. *Am Archt*—Nov. 10, 1906. Serial. 1st part. No. 80320.

## Earth Slip.

**The Earth Slip in the Face of the Embankment of the North Dike of the Wachusett Reservoir.** Caleb Mills Saville. An account of the slip that occurred on April 11, explaining the conditions. Ills. 800 w. *Eng News*—April 25, 1907. No. 83911.

**The Earth Slide at the North Dyke of the Wachusett Reservoir.** A statement of the facts in regard to this slide, with illustrations. 1200 w. *Eng Rec*—April 27, 1907. No. 83943.

## Excavation.

**Hydraulic Excavation in Seattle with a Motor-Driven Turbine Pump.** George Holmes Moore. Describes the plant used for the reduction of Denny Hill. Ills. 900 w. *Eng News*—May 16, 1907. No. 84387.

**Retaining the Sides of a large Excavation.** Illustrated description of sheeting and bracing used for the Swift & Co. building in New York City, where the excavation was through a deep stratum of fine sand and quicksand, with abundance of ground water. 1500 w. *Eng Rec*—Aug. 24, 1907. No. 86556.

**Methods and Costs of Loading Dump Wagons with Scrapers, and the Design of a Loading Platform.** Describes work where the dump wagons were driven under a platform and loaded by drag scrapers, which were dumped through a hole in the platform. 1200 w. *Engng-Con*—Jan. 23, 1907. No. 81758.

**Scraper Excavators.** Illustrates and describes types of excavators being used extensively on various kinds of work. 2000 w. *Eng News*—March 21, 1907. No. 83201.

**Method of Excavating Rock in Large Masses.** George C. McFarlane. Notes on methods used on the Grand Trunk Pacific Railroad for rocks of extreme hardness. Deep holes and heavy blasts. 2500 w. *Eng & Min Jour*—Aug. 3, 1907. No. 86103.

**Hints on Handling Wheeled Scrapers.** Suggestions for operating scrapers so as to increase the amount of earth exca-

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## Failures

vated. 1500 w. *Engng-Con*—Aug. 28, 1907. No. 86651.

**Neukirch Patent Excavating Apparatus** (Ueber das Schrämmverfahren Patent Neukirch). — Seyboth. Ills. 5300 w. Glückauf—Feb. 23, 1907. No. 83663 D.

**Methods and Cost of Moving Earth in the Fresno Scrapers in Arizona, and the Cost of Trimming Slopes.** An account of work in grading a railroad bed. 1500 w. *Engng-Con*—Oct. 2, 1907. No. 87407.

See also **Foundations and Steam Shovels**, under **CONSTRUCTION**.

## Factories.

**The Structural Design of Engineering Factories.** Adam Hunter. Remarks on changed conditions which have caused improvements in shops and equipment, and discusses the general principles of structural design, and some constructional details. 5800 w. *Builder*—Dec. 29, 1906. No. 81540 A.

**The Bush Terminal Company Factory No. 2.** Brief illustrated description of the construction of this fireproof factory in Brooklyn, N. Y. 1800 w. *Eng Rec*—Dec. 1, 1906. No. 80817.

**An Example of Recent Factory Construction.** Robert I. Clegg. Illustrated detailed description of the Automobile Works of the White Co., recently built at Cleveland, Ohio. 2500 w. *Ir Age*—May 2, 1907. No. 84028.

**The New Factory Building of the Murphy Varnish Co.** William F. Burleigh. A reinforced concrete building erected at Newark, N. J., of interest because of the unusual style of architecture for factory construction. A mansard roof. 1800 w. *Eng Rec*—May 4, 1907. No. 84227.

**The Steel Framework of a Shop for Light Metal Work.** Plan and description of a shop carefully designed to secure minimum weight and avoid interior obstructions, provide for extensive traveling crane service, roof lighting and drainage. 1800 w. *Eng Rec*—April 27, 1907. No. 83949.

See also **Automobile Shops, Buildings, Concrete, Roofs, and Steel Buildings**, under **CONSTRUCTION**; and **Reinforced Concrete**, under **MATERIALS**.

## Failures.

**The Failure of a Reinforced-Concrete Building at Philadelphia.** Illustrates and describes the failure, on July 9th, of a three-story and basement building in course of construction at 15th St. and Washington Ave., due probably to premature removal of supporting struts. 1200 w. *Eng News*—July 18, 1907. No. 85739.

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## Failures

The Collapse During Construction of a Reinforced-Concrete Building of the Eastern Kodak Co., Rochester, N. Y. Extracts from the Coroner's verdict, and from Mr. McClintock's technical report to the Coroner, with views illustrating the wreck. 3500 w. Eng News—Jan. 3, 1907. No. 81373.

The Collapse of a Reinforced Concrete Building Near Rochester, N. Y. An illustrated account of the collapse of the Kodak building. 1600 w. Eng Rec—Jan. 5, 1907. No. 81491.

Report on Failure of Reinforced Concrete Building of Eastern Kodak Co., Kodak Park, N. Y. Gives report of experts on this accident near Rochester, N. Y., after investigations made of the failure and tests of portions adjacent to the collapse. Ills. 2200 w. Eng News—Jan. 31, 1907. No. 82026.

Recent Failures of Reinforced Concrete. Louis H. Gibson. Remarks on the recent disasters at Long Beach, Cal., and at Rochester, N. Y., and the general reinforced concrete business. 2500 w. Munic Engng—Feb., 1907. No. 82276 C.

The Lesson of a "Concrete-Steel" Floor Failure. Gives facts relating to the collapse of a floor in England, discussing the cause of the failure. Ills. 2500 w. Builder—Feb. 16, 1907. No. 82585 A.

Failure of a 176 Ft. Reinforced-Concrete Chimney at Louisville, Ky. D. R. Lyman. An illustrated account of the failure of the chimney of the Seelbach Hotel, and report of the condition of the material, and the circumstances. 900 w. Eng News—Feb. 7, 1907. No. 82188.

Collapse of Reinforced Concrete Building in Philadelphia. Gives the opinions of engineers, and the views of the coroner's jury as to the cause of failure, with editorial. Ills. 4500 w. Cement Age—Aug., 1907. No. 86482.

The Collapse of the Bixby Hotel at Long Beach, Cal., on Nov. 9. H. Hawgood. An illustrated report of this disaster, with extracts from the testimony before the coroner's jury. Also editorial. 4500 w. Eng News—Nov. 29, 1906. No. 80767.

Unexpected Accidents (Accidents Inopinés). Paul Sée. Examples of failures of various types of structures, due to causes which could not have been provided for. 3500 w. Mem. d. l. Soc. d. Ing Civ d France—March, 1907. No. 84102 G.

See also Chimney Collapse, under CONSTRUCTION.

## Filling.

Fills Made from Cars Running on a

## CONSTRUCTION

Suspended Cableway. Illustrated description of a suspension bridge system of making earth fills. 1500 w. Eng News—Oct. 10, 1907. No. 87550.

## Fireproof.

Steamship Terminal with Fireproof Warehouses; New Orleans Terminal Ry. Plans and brief description of the fireproof construction for the sheds at Chalmette, near New Orleans. 1000 w. Eng News—Nov. 22, 1906. No. 80557.

The Marlborough Apartment House, Baltimore, Md. Illustrated description of a ten-story building with concrete skeleton, and brick exterior walls supported on the reinforced concrete floors. 1200 w. Eng Rec—Jan. 26, 1907. No. 81950.

Fire-Proof Construction. A review of criticisms of experts in recent reports to the Government on the condition of buildings after the San Francisco disaster. 5000 w. Eng Rec—June 15, 1907. No. 85056.

Fire Protection Engineering. George Velten Steeb. Indicates the results already accomplished, showing how the work is being carried on. General discussion. 5000 w. Jour Assn of Engng Socs—Jan., 1907. No. 82496 C.

Fireproof Construction. M. M. Sloan. Discusses the requirements and special features of such structures. 3000 w. Archts & Bldrs' Mag—Oct., 1907. Serial. 1st part. No. 87974 C.

## Floors.

Ferro-Concrete Floors at the Waldorf Hotel, Aldwych, London. Illustrates and describes typical sections of these fire-proof floors. 1400 w. Engng—April 19, 1907. No. 84002 A.

Economics of Reinforced Concrete Floor Slabs. A. E. Budell. A comparison between the actual cost of the slab floor and the combination tile and beam system. Ills. 800 w. Engng-Con—Aug. 14, 1907. No. 86405.

Calculation of Reinforced Concrete Floors (Beitrag zur Berechnung der Hauptunterzüge von Eisenbeton-Balkendecken). S. C. Drach. Mathematical analysis of the stresses in concrete floors, longitudinally and transversely strengthened. Diagrams. 500 w. Zeitschr d Oest Ing u Arch Vereines—Jan. 4, 1907. No. 82334 D.

See also Concrete, Corrosion, and Fireproofing, under MATERIALS OF CONSTRUCTION.

## Foundations.

Allowable Pressures on Deep Foundations. Elmer Lawrence Corthell. A re-

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port of investigations made by the writer. 1000 w. Inst of Civ Engrs—Abstract of paper No. 3598. No. 80536 N.

Notes on Foundations. Discusses the requisites of a good foundation, and the processes used in excavating. 2500 w. Can Archt—Aug., 1907. No. 86572 C.

Foundations. An informal discussion of the best system of construction on an alluvial deposit, materials, setting of concrete, etc. 3800 w. Pro Am Soc of Civ Engrs—Aug., 1907. No. 86644 E.

Foundations. Continued discussion of the best system for heavy structures on alluvial ground; the use of iron or steel when in contact with water; and the strength of concrete under stated conditions. 6500 w. Pro Am Soc of Civ Engrs—Sept., 1907. No. 87715 E.

The Foundations of the Trinity Annex and Boreel Buildings, New York. Explains the change made in the location of Thames St., New York, and the method of constructing the foundations for new buildings on Broadway, near Wall St. 3500 w. Eng Rec—Nov. 3, 1906. No. 80261.

Special Foundation Methods for a Small but Lofty Office Building. Describes the foundation work for an office building at No. 1 Wall St., New York, explaining the conditions of the site. 2500 w. Eng Rec—Dec. 1, 1906. No. 80816.

The Substructure of the West Street Building, New York. An illustrated description of the construction of foundations for a 23-story steel-cage building, describing the site which is within 300 ft. of the bulkhead line of the North River, and giving information of much interest. 3000 w. Eng Rec—Dec. 29, 1906. No. 81307.

Method of Constructing the Foundations for the Trust Company of America Building, New York City. Maurice Deutsch. Illustrates and describes a typical example of foundation work in lower Manhattan Island. 2500 w. Engng-Con—Jan. 9, 1907. No. 81550.

Method of Constructing the Foundations for the Trust Company of America Building, New York City. Maurice Deutsch. An illustrated description of foundation work for a 25-story building in Wall St. 2800 w. Sch of Mines Qr—July, 1907. No. 86648 D.

Pneumatic Caisson Foundations. Considers the chief types of successful foundations devised in recent years, especially to meet the conditions of lower Manhattan, New York City. Gives illustrated description of the foundation work

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for the Singer Building. 1400 w. Archts & Bldrs' Mag—Jan., 1907. No. 81598 C.

Concrete Pneumatic Caisson Foundations. Edwin F. Kellogg. A detailed description of the building of foundations for the 41-story Singer Building in New York City. Ills. 2000 w. Cement Age—March, 1907. No. 83161.

The Pneumatic Foundations of the City Investing Building, New York. Describes the property adjacent to this thirty-two story building, and the underpinning methods employed, giving an illustrated description of the difficult foundation work. 4000 w. Eng Rec—March 2, 1907. No. 82722.

The "Compressol" System of Making Foundations. Illustrated description of an improved type of the "Compressol" machine, describing the operation and the process. 1200 w. Engng—June 7, 1907. No. 85114 A.

Machinery and Methods for the Excavation of Sky-Scraper Foundations. T. Kennard Thomson. An illustrated description of methods used in construction of these foundations, and modern machinery for carrying on the work. 4500 w. Engineering Magazine—Oct., 1907. No. 87280 B.

Foundation Problems in New York City. C. M. Ripley. Illustrates and describes the use of the air lock in sinking caissons to bedrock, and how the collapse of neighboring buildings is prevented. 1700 w. Ir Age—Feb. 14, 1907. No. 82264.

Foundation Problems in New York City. C. M. Ripley. An illustrated study of the laying of the foundations for the new building of the Trust Company of America in the Wall St. district, showing the increasing engineering difficulties that must be met. 1800 w. Munic Engng—March, 1907. No. 82694 C.

The Foundations of the Singer Building Extension, New York. An illustrated article describing the foundations for the tower 63 ft. square and a total height of over 612 ft. above the curb. 2200 w. Eng Rec—Feb. 2, 1907. No. 82105.

Concrete Foundations of the Tallest Skyscraper. Charles M. Ripley. Illustrated description of the methods employed for the Singer Building, the site of which is underlaid with a marshy soil, part quicksand and soft mud. 2500 w. Cement—May, 1907. No. 84556 C.

Tall Building Foundations on Soft Clay. Describes tests made preparatory to the erection of the Traders' Bank of Canada, at Toronto, to determine the bearing capacity of the soil. Ills. 1600

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w. Eng Rec—June 22, 1907. No. 85200.

Condensation Water Intake and Tower Foundations, New Waterside Station, New York Edison Co. Illustrates and describes the construction of the features named. 1800 w. Eng Rec—Jan. 12, 1907. No. 81581.

Difficult Foundations of the Hoffman House Extension, New York. Describes the conditions of adjacent buildings and the bracing and underpinning, the use of steel sheet piles, and the difficult excavation. 3000 w. Eng Rec—March 2, 1907. No. 82733.

Constructing Elevated Railroad Foundations Over a Large Sewer. Illustrates and describes unusual foundation work in connection with the extension of the New York Rapid Transit Railroad system. 2000 w. Eng Rec—June 8, 1907. No. 84851.

Foundation Work and Ground-Water Protection for the Enlargement of the Merchants' and Manufacturers' Bank at Berlin (Fundierung und Grundwasser-Abdichtung für den Erweiterungsbau der Bank für Handel und Industrie zu Berlin). Th. Gesztessy. An illustrated mathematical description of the design. 2500 w. Beton u Eisen—Aug., 1907. No. 86980 F.

## Foundry Buildings.

The Design and Construction of Foundry Buildings. George K. Hooper. Read before the Am. Found. Assn. Describes some of the plants designed by the author. 4500 w. Eng Rec—June 1, 1907. No. 84704.

## Gasholders.

The Development of Gasholder Construction. George H. Cressler. Read before the Wisconsin Gas Assn. A review of the three main periods of development. 2000 w. Eng News—July 11, 1907. No. 85576.

## Hotels.

The Construction of the Hotel Traymore at Atlantic City, N. J. Illustrated description of a building constructed on the site of an old hotel and adjacent property, without interrupting the hotel business. Reinforced concrete and hollow tile construction is employed. 2200 w. Eng Rec—Nov. 10, 1906. No. 80327.

Construction of the New Plaza Hotel, New York. Brief illustrated account of the removal of the old Plaza, and the construction of the 12-story, steel-cage, fire-proof structure now in progress. 2200 w. Eng Rec—Nov. 17, 1906. No. 80510.

## House Moving.

Novel House-Moving Operations. Ed-

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ward H. Crussell. Illustrates and describes method of loading a building on cars, and anchoring to loaded coal cars, for removal along a railway. 1000 w. Sci Am Sup—June 22, 1902. No. 85165.

## Ice Problem.

The Ice Problem in Engineering Work in Canada. Howard T. Barnes. Read before the British Assn. An explanation of conditions in the Canadian streams during winter, and some of the means of overcoming difficulties. 2000 w. Engng—Aug. 9, 1907. No. 86471 A.

## Irrigation.

See Water Supply.

## Lighthouse.

Lighthouse Construction in the Philippines. Spencer Cosby. Explains the conditions in those islands, illustrating and describing the designs and work of the Spaniards, and the changes introduced by Americans, especially the use of concrete and reinforced concrete. Plates. 4500 w. Pro Am Soc of Civ Engrs—Nov., 1906. No. 80934 E.

The Fastnet Rock Lighthouse. An illustrated description of this granite structure on the S. W. coast of Ireland, and its erection, as described by C. W. Scott. 3500 w. Engr, Lond—Sept. 13, 1907. No. 87219 A.

## Lookout Tower.

The Outlook Tower of Beinn Bhreagh, the First Iron Structure Built of Tetrahedral Cells. T. W. Baldwin. Illustrated description of an interesting experimental structure recently built by Dr. A. G. Bell at his summer home in Cape Breton. 1000 w. Sci Am—Oct. 5, 1907. No. 87474.

## Material Handling.

Some Ancient Methods of Lifting Stones and Timber. Clement E. Stretton. Describes mechanical contrivances used by the ancients. Diagrams. 2000 w. Sci Am Sup—Sept. 14, 1907. No. 86898.

## Ornamental Work.

Notable Ornamental Sheet Copper Work. Illustrated description of construction work at the Hoboken terminal of the Delaware, Lackawanna & Western Railroad. 2500 w. Met Work—Jan. 5, 1906. No. 81394.

## Perrons.

Foundations for Concrete and Reinforced-Concrete Perrons (Unterbau von Freitreppen in Beton und Eisenbeton). Herr Weidmann. Mathematical discussion of their design and calculation. Ills. 3000 w. Serial. 1st part. Deutsche Bauzeitung—April 24, 1907. No. 84139 D.



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### Piling

#### Piling.

Methods and Cost of Driving Raymond Concrete Piles for a Building Foundation. Gives figures of cost computed from records obtained in constructing the pile foundations for a building in Salem, Mass. 1000 w. Engng-Con—Feb. 13, 1907. No. 82219.

Experience with Steel Sheet Piling in Hard Soils. From a paper by William G. Fargo, read before the Michigan Engng. Soc., giving the writer's experience with this material. 1700 w. Eng Rec—Feb. 16, 1902. No. 82413.

Method and Cost of Driving Sheet Piling for the Cut-Off Wall of a Concrete Dam Founded on Sand. Carl P. Abbott. Sketch and description of method of driving, giving cost of labor, supplies, etc. 500 w. Engng-Con—Jan. 16, 1907. No. 81629.

Methods and Cost of Operating Pile Drivers and Driving Steel Sheet Piling. A paper by William A. Fargo, read before the Mich. Engng. Soc., with additional data on the cost of steel sheet piling work. Ills. 3000 w. Engng-Con—May 1, 1907. No. 84071.

Experience with Steel Sheet Piling in Hard Soils. William G. Fargo. Read at meeting of the Mich. Engng. Soc. Illustrates forms of sheet piling, and describes methods of driving and related matters, giving the cost. 2500 w. Eng News—April 4, 1907. No. 83450.

See also Concrete Piling and Tunnels, under CONSTRUCTION.

#### Planning Works.

The Planning of Contractors' Work. John S. Ely. Discusses the importance of planning to execute the work in the least time at a reasonable cost, illustrating by example. 2000 w. Engng-Con—June 19, 1907. No. 85145.

#### Race Course.

A New Race Course for Parisians. Jean Schopper. An illustrated description of the new Tremblay race-course buildings which embody all the latest improvements. 1200 w. Archt Rec—May, 1907. No. 83929 C.

#### Reclamation Work.

Building a Town Site by Suction Dredge. Day Allen Willey. Illustrated description of interesting work at Cape May, N. J., by which a salt marsh is being filled, giving an area sufficient for 7500 dwellings, in addition to necessary streets. 1500 w. Sci Am—May 25, 1907. No. 84546.

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#### Reconstruction.

A Piece of Reconstruction Work at Stanford University. Charles B. Wing. Brief illustrated description of the method used to restore the arcade arches distorted by the earthquake at Stanford University, to their original position, and of replacing the broken stones. 700 w. Cal Jour of Tech—Jan., 1907. No. 82050.

#### Regulations.

See Reinforced Concrete, under CONSTRUCTION.

#### REINFORCED CONCRETE.

Another Reinforced Concrete Speed Record. George J. Seymour. Illustrated account of the erection of the new works of the Anderson Carriage Co., of Detroit. 4000 w. Cement Age—March, 1907. No. 83165.

A New Method of Reinforced Concrete Wall Construction. A. E. Budell. Describes methods used in constructing a machine shop at Old Bridge, N. J. 800 w. Engng-Con—Nov. 28, 1906. No. 80733.

French Rules on Reinforced Concrete. Translated report of the official instructions just issued by the ministry of public works to govern the use of this material in France. 6500 w. Cement Age—Nov, 1906. No. 80418.

Revision of French Rules. Gives final version as applied to reinforced-concrete construction, with list of corrections made. 2500 w. Cement Age—Sept., 1907. No. 87136.

Reinforced Concrete in the San Francisco Fire: The Johnson Building. Gives the statement by A. L. A. Himmelwright in regard to the Johnson Building, and a letter from C. F. Wieland claiming the failure was due to defective design. Ills. 2000 w. Eng News—Nov. 8, 1906. No. 80333.

The Calculation of Concrete Slabs with Iron Reinforcement (Beitrag zur Berechnung von Betonplatten mit Eiseneinlagen). Prof. G. Ramisch. Mathematical discussion, with diagram, of concrete, flat on top and vaulted underneath, with straight iron reinforcement. 1000 w. Zeitschr d Oest Ing u Arch Ver—Oct. 26, 1906. No. 80622 D.

The Calculation of Reinforced Concrete Structures with Eccentric Loading (Die Berechnung von Eisenbeton-Konstruktionen bei Excentrisch Wirkender Normalkraft). Hr. Landmann. Mathematical discussion, with diagrams. Serial. 1st part. 1000 w. Beton u Eisen—No. 10, Oct., 1906. No. 80650 F.

The Undosa Bath at Starnberg (Das

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Undosa-Wellenbad in Starnberg). G. Schellenberger. Illustrated description of large bathing establishment, where waves are produced artificially, and of restaurant, at Starnberg Lake, in Bavaria. The construction is mainly in reinforced concrete. 21 plates. Serial. 1st part. 2000 w. Beton u Eisen—No. 10, Oct., 1906. No. 80648 F.

Trusses of Reinforced Concrete (Fachwerkträger aus Eisenbeton). S. Zipkes. Illustrated description of lattice girders, bridges and other framework structures whose members are of reinforced concrete. 1 plate. Serial. Part 1. 2000 w. Beton und Eisen—No. 10, Oct., 1906. No. 80647 F.

Cement Beton Shop Floors and Beams. Robert Grimshaw. Illustrates the use of this material in the form of slabs laid between or across the beams, and other developments of this idea. 700 w. Ir Trd Rev—Nov. 1, 1906. No. 80163.

Evolution of Reinforced Concrete in Germany. O. Kohlmoorgen. A review of the development of this form of construction in Germany. 1500 w. Am Archt—Dec. 15, 1906. No. 81009.

Reinforced Concrete Construction. Walter Mueller. Discusses the Ransome system and its effect upon the Portland cement industry, and describes other systems. Ills. 1600 w. Cement Age—Dec., 1906. No. 80946.

Reinforced Concrete in a Canadian Machine Shop Plant. Illustration and description of an application at Toronto, Canada. 700 w. Eng News—Dec. 20, 1906. No. 81077.

A Large Reinforced Concrete Residence. Illustrates and describes interesting features of a residence in Walkerville, Ont., of fireproof construction. 800 w. Eng Rec—Jan. 26, 1907. No. 81947.

Cost of Reinforced Concrete Building Construction. Louis H. Gibson. Estimation of cost with explanation of structural details. Ills. 1800 w. Munic Engng—Jan., 1907. No. 81385 C.

An Economical Reinforced Concrete Shop Construction. Drawings and description of work in connection with the construction of the walls of shops being erected in Plainfield, N. J. 2000 w. Eng News—Jan. 17, 1907. No. 81669.

A Reinforced-Concrete Shop with Steel Roof-Trusses and Crane-Girders. William F. Tubesing. Illustrates and describes an addition to the Bullock works of the Allis-Chalmers Co., Cincinnati, O. 1300 w. Eng News—Jan. 10, 1907. No. 81561.

The Washington Apartment House, Baltimore, Md. Brief illustrated description of a 6-story building with a reinforced concrete skeleton and floors carrying the Indiana limestone walls at every story. 900 w. Eng Rec—Jan. 19, 1907. No. 81723.

The Calculation of Reinforced Concrete Structures with Eccentric Loading. (Die Berechnung von Eisenbeton-Konstruktionen bei Excentrisch Wirkender Normalkraft). L. Landmann. Mathematical discussion, with diagrams. Serial. 2d part. 1000 w. Beton und Eisen—Nov., 1906. No. 81860 F.

An Eight-Story Reinforced Concrete Printing Building. Illustrated description of the building for the Ketterlinus Lithographic Manufacturing Co., in Philadelphia. 1700 w. Eng Rec—Feb. 2, 1907. No. 82108.

The Design and Construction of a Reinforced Concrete Apartment House. H. G. Perring. General remarks on this material, with illustrated description of a structure in Philadelphia. Discussion. 5000 w. Pro Engrs' Club of Phila—Jan., 1907. No. 82550 D.

French Government Rules for the Design and Construction of Reinforced Concrete. Abstract of instructions prepared for the French Ministry of Public Works, with comments. 2000 w. Eng News—March 21, 1907. No. 83199.

Hints on the Design and Execution of Reinforced Concrete Works. E. P. Goodrich. Suggestive notes from the experience and observation of the writer. 10,000 w. Eng Rec—March 2, 1907. No. 82726.

Reinforced Concrete Construction: Its Proper Application in Earthquake Countries. Charles Derleth, Jr. A discussion of this material, its use, applications, designs, stresses, etc. 4800 w. Jour Assn of Engng Socs—Feb., 1907. No. 83040 C.

Reinforced Concrete Design and Construction. W. P. Day. Discusses some of the factors essential to an economical structure of this material, and gives the safe unit stresses as allowed in a recent report to govern the use of this material in France. Ills. 1800 w. Cal Jour of Tech—March, 1907. No. 83188.

Reinforced-Concrete Construction. William O. Ludlow. From a lecture on Architectural Engineering delivered at Stevens Inst. Tech. Considers, as an example, the planning and construction of an 8-story loft building. 3000 w. Stevens Ind—Jan., 1907. No. 83308 D.

Recent Papers on Reinforced Concrete Construction in Europe (Neuere Vor-

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schriften, betreffend die Bauweise in Betoneisen). Abstract of papers recently read before German Engineering Societies. Diagrams, formulæ. Serial. 1st part. 4400 w. Oest Wochenschrift f d Oeffentlichen Baudienst—Jan. 5, 1907. No. 82930 D.

The Mechanics of Reinforced Concrete. C. B. Wing. Considers the development of formulæ, the principles and methods to be used in application of formulæ, giving comparison of results obtained by formulæ with results of tests. 4800 w. Jour Assn of Engng Soc's—Feb., 1907. No. 83039 C.

The Herbivora Building in the Cincinnati Zoological Garden. Illustrated description of a recently completed reinforced concrete building having special features of design. 2000 w. Eng Rec—March 2, 1907. No. 82716.

A Chicago Warehouse of Reinforced Concrete Construction. Brief illustrated description of an interesting example of the application of this material to warehouse construction. 1200 w. Eng News—March 28, 1907. No. 83321.

A New Concrete Wood-Worsted Mill. E. S. Larned and Frank E. Warren. Illustrated description of the construction of an important manufacturing plant involving interesting work in reinforced concrete. The work was carried out with speed in freezing weather. 7500 w. Cement Age—April, 1907. No. 83787.

Reinforced Concrete in Power Station Construction. H. L. Knowlton. An illustrated article discussing successful applications of this material, and details of construction. 5500 w. Cassier's Mag—April, 1907. No. 83332 B.

Concrete Reinforcement for Irrigation Structures. F. W. Hanna. Explains some of the differences in the reinforcement for such structures from architectural practice. 1500 w. Eng News—April 4, 1907. No. 83448.

Instructions for Reinforced Concrete Field Work. Extracts from a handbook of instructions prepared by the Engineering Department of the Trussed Concrete Steel Co. of Detroit. 2500 w. Eng Rec—April 6, 1907. No. 83482.

A Code of Instructions for Inspecting and Supervising Reinforced Concrete Construction Work. Extracts from the code of the Trussed Concrete Steel Co., of Detroit, Mich., giving instructions for this work. 6000 w. Engng-Con—April 24, 1907. No. 83922.

Reinforced Concrete Construction. Gunvald Aus. On the necessity of constant inspection of every detail to insure a

safe construction, the importance of design, etc. 1600 w. Am Archt—May 4, 1907. Special No. No. 84361 E.

Reinforced Concrete Construction in California. Horatio F. Stoll. A brief review of the concrete work now under way in rebuilding of the districts on the Pacific Coast destroyed by the earthquake and fire. Ills. 2200 w. Cement Age—May, 1907. No. 84554.

Reinforced Concrete in Spain (Le Béton Armé en Espagne). J. E. Ribera. Describes bridges, aqueducts and a siphon of reinforced concrete now under construction. Ill. 5000 w. Mem. d. l. Soc. d. Ing. Civ. d. France. March, 1907. No. 84103 G.

The Coal Pockets of the Salem Mines. A structure of reinforced concrete, of rather unusual character recently built at Alexandria, Pa., is illustrated and described. 1000 w. Eng Rec—May 4, 1907. No. 84226.

Largest Concrete Machine Shop in the World. L. P. Alford. Illustrates and describes the buildings and methods of construction of the new plant of the United Shoe Machinery Co., at Beverly, Mass. 4500 w. Am Mach—Vol. 30. No. 21. No. 84488.

Reinforced-Concrete Construction on the New Building of the Vienna Board of Trade (Eisenbeton-konstruktionen am Neubau der Wiener Handels- und Gewerbekammer). Karl Rössle. A mathematical discussion of the design of this 8-story building. Ills. 1800 w. Beton u Eisen—April, 1907. No. 84186 F.

A Reinforced Concrete Laundry Building. Brief illustrated description of a three-story building in Newark, N. J. 900 w. Eng Rec—June 8, 1907. No. 84852.

The Roman Catholic Parish Church in Pressbaum (Die Katholische Pfarrkirche in Pressbaum). Josef Gaugusch. Illustrates and describes details of design and construction of this reinforced concrete structure. Plate. 1500 w. Beton u Eisen—May, 1907. No. 84954 F.

Early Reinforced Concrete in England. Reviews what was done in England in reinforced-concrete construction before the introduction of the French systems. 2500 w. Engng—June 21, 1907. No. 85397 A.

Reinforced-Concrete Building Construction. An informal discussion before the Boston Society of Civil Engineers. 19500 w. Jour Assn of Engng Soc's—June, 1907. No. 85896 C.

Use of Reinforced Concrete in Buildings. Frank C. Schmitz. Considers the design and application of this material to the erection of buildings, discussing

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foundations, columns, beams and girders, stairs, floors, and walls. Ills. Discussion. 9500 w. No. 66. Pro Brooklyn Engrs' Club—1906. No. 85972 N.

Report of the Joint Committee on Reinforced Concrete. Report adopted May 27, 1907, at the general meeting of the Royal Inst. of British Architects. Rules to be observed in construction. 8500 w. Jour Roy Inst of Brit Archts—June 15, 1907. No. 85499 B.

The New Customs House at Düsseldorf (Die Neuen Zollschuppen im Düsseldorfer Hafen). D. Geiss. Illustrated description of the design and construction of this two-story, reinforced-concrete building. 2000 w. Serial. 2 parts. Deutsche Bau—June 12 and 26, 1907. No. 85640 each D.

A Reinforced-Concrete Mill Building with Separately-Molded Members. An illustrated account of the construction of several reinforced-concrete buildings at the Edison cement works by casting the members and erecting them later. 2700 w. Eng News—July 4, 1907. No. 85472.

Notes on Reinforced Concrete Designing. Gives appendices to the report of the Joint Committee on Reinforced Concrete, explaining the reasons for certain requirements suggested. 2000 w. Eng Rec—Aug. 3, 1907. No. 86091.

Reinforced-Concrete Roofs for Manufactories (Die Eindeckung der Fabrikdächer in Eisenbeton). L. Geusen. A discussion of the value of reinforced concrete as a roofing material with points on roof design. Ills. 3500 w. Serial. 1st part. Beton u Eisen—July, 1907. No. 86270 D.

A Reinforced Concrete Water Tower at Anaheim. A tower in Southern California is described in detail. Ills. 1500 w. Eng Rec—Aug. 24, 1907. No. 86559.

The McNulty Building, New York. A ten-story and basement, small-column, reinforced-concrete building on 52d St., New York City, is illustrated and described. 1200 w. Eng Rec—Sept. 14, 1907. No. 87026.

The Mushroom System of Reinforced Concrete Building Construction. A. S. Malcolmson. Illustrated description of the system invented by C. A. P. Turner. 2300 w. Engng-Con—Sept. 4, 1907. No. 86829.

The McGraw Building. An illustrated detailed description of an example of reinforced concrete construction on West 39th St., New York City. 2000 w. Archts & Bldrs' Mag—Dec., 1906. No. 80953 C.

The Reinforced Concrete Work of the

McGraw Building. William H. Burr. Illustrated detailed description of a true reinforced-concrete structure, designed to afford the greatest possible resistance to the vibration of heavy machinery. 5800 w. Pro Am Soc of Civ Engrs—Oct., 1907. No. 87881 E.

Method and Cost of Constructing Reinforced Concrete Kiln House of Separately Molded Members, Edison Portland Cement Co. Gives data relating to a new kiln house at New Village, N. J., with illustrations. 2500 w. Engng-Con—Oct. 2, 1907. No. 87406.

Cast Concrete-Steel Members. Illustrated description of kiln houses of the Edison Portland Cement Co., where the members were cast and assembled like fabricated steel. 800 w. Ins Engng—Oct., 1907. No. 87856 C.

New Buildings of the King Plaster Mills, Staten Island. Five-story reinforced-concrete structures, occupying irregular areas, designed to support floor loads from 200 to 600 lbs. per square foot, are illustrated and described. 2000 w. Eng Rec—Sept. 28, 1907. No. 87313.

The New Plaster Mill of the American Gypsum Co. Describes a fireproof reinforced concrete building near Port Clinton, O. Ills. 1800 w. Eng Rec—Oct. 12, 1907. No. 87568.

Method and Cost of Building a Reinforced Concrete Car Barn. Illustrated detailed description, with costs, of a barn at Easton, Pa. 1100 w. Engng-Con—Oct. 23, 1907. No. 87888.

Report of the Special Committee on Reinforced Concrete of the Engineers' Club of St. Louis Embodied in the Building Ordinances of the City of St. Louis. 5500 w. Jour Assn of Engng Socs—Sept., 1907. No. 87863 C.

An Analytic and Graphic Method of Determining the Section of Reinforced Concrete Beams (Ein Weg zur Analytischen und Graphischen Behandlung des mit Eisen Armierten Betonquerschnittes). Rudolf Pokorny. A mathematical paper on the design of reinforced-concrete members. Ills. 3200 w. Zeitschr d Oest Ing u Arch Ver—Sept. 6, 1907. No. 87645 D.

The Design of Rigid Frames (Beitrag zur Berechnung Steifer Rahmenkonstruktionen). Otto Leuprecht. A mathematical paper with worked-out examples. Ills. 2200 w. Serial. 1st part. Beton u Eisen—Sept., 1907. No. 87655 F.

The Remarkable Settlement of a Concrete Building in Tunis. P. Fountain. Illustrates and describes an example of settlement of a large building built on marshy ground, and the restoration to

# CIVIL ENGINEERING

## Reservoirs

the vertical position. 800 w. Eng Rec—Nov. 3, 1906. No. 80263.

See also Automobile Shops, Beams, Buildings, Chimney Collapse, Columns, Concrete, Contractor's Plant, Factories, Failures, Floors, Foundations, Hotels, Perrons, Retaining Walls, San Francisco, Warehouses, and Waterproofing, under CONSTRUCTION; Beams, Concrete, Corrosion, and Reinforced Concrete, under MATERIALS OF CONSTRUCTION; Beams, under MEASUREMENT; Concrete Pipe, Dams, Reservoirs, and Standpipes, under WATER SUPPLY; and Breakwaters, Coast Protection, and Piers, under WATERWAYS AND HARBORS.

## Reservoirs

See same title, under WATERWAYS AND HARBORS.

## Retaining Walls.

Armored Concrete Retaining Walls. Discusses a design brought forward by M. F. Chaudy, in a communication to the Soc. of Civ. Engrs. of France, which proposes to employ a combination of armored concrete and ordinary masonry, and to introduce horizontal platforms at the back of the walls which will support the weight of earth. Diagrams. 1500 w. Engr, Lond—Feb. 22, 1907. No. 82840 A.

Reinforced Concrete Retaining Wall Design. Evan P. Bone. Explains the theory of design used for the walls, giving table and charts. 5500 w. Eng News—April 25, 1907. No. 83906.

On a More Convenient Section for Retaining Walls (Sul Profilo più Convenienti dei Muri di Sostegas delle Terre). Giulio Stabilini. Mathematical discussion of strength of retaining walls of various sections. Ills. Serial. 1st part. 4000 w. Il Monitor Tech—May 10, 1907. No. 84924 D.

The Melwood Avenue Retaining Wall, Pittsburg. Describes the construction of a reinforced-concrete retaining wall about 220 ft. long which has a maximum height at the center of 64 ft., exclusive of the 4-ft. parapet wall. Ills. 1500 w. Eng Rec—Sept. 28, 1907. No. 87309.

A Diagram for Overturning Moments on Retaining Walls for Earth or Water. Gives a graphical solution of the Rankine retaining wall formula, which was constructed by Charles H. Hoyt, who has found it a time-saver in retaining-wall work. 700 w. Eng News—April 25, 1907. No. 83909.

See also Bronx, under BRIDGES.

## Roads.

See under Municipal.

## CONSTRUCTION

### Roofs.

Saw-Tooth Roofs for Factories. Knight C. Richmond. Describes this form of roof-lighting, considering its aims advantages, construction, design, etc. Ills. 4000 w. Pro Am Soc of Mech Engrs—Nov., 1906. No. 80524.

Saw Tooth Skylight in Factory Roof Construction. Discussion of paper by Fred S. Hines. Ills. Also discussion of paper on the same subject by Knight C. Richmond. 5400 w. Pro Am Soc of Mech Engrs—Dec., 1906. No. 81066.

The Collapse of Concrete Roof Arches at the Lawrence Filter. John F. O'Connell. An illustrated account of the recent collapse of the groined concrete roof arches, thought to be due to the action of frost before the concrete had set. Also editorial. 2500 w. Eng Rec—April 27, 1907. No. 83947.

Fire Resistance of Tin Roofing. Edwin L. Seabrook. A study of its fire-protecting qualities giving instances where it prevented the fire from spreading. Ills. 1500 w. Ins Engng—April, 1907. No. 83958 C.

The New Roof Over Charing Cross Terminal Station, London. Charles S. Lake. A general illustrated description of this new roof, now nearing completion. 1200 w. Eng Rec—May 11, 1907. No. 84325.

A Long-Span Truss Roof: Armory for Squadron C, New York National Guard, New York City. Drawings and description of the general characteristics of the steel riding-hall roof of an armory in Brooklyn. 2500 w. Eng News—Aug. 29, 1907. No. 86631.

How a Roofer Managed a Skylight Job. H. Tims Reilloch. The first of a series of illustrated articles on handling different kinds of sheet metal work. 1200 w. Met Work—Feb. 2, 1907. Serial. 1st part. No. 82056.

See also Reinforced Concrete, under CONSTRUCTION; and Roof Trusses, under MEASUREMENT.

## San Francisco.

Some Engineering Lessons of the San Francisco Disaster. J. L. Van Ornum. Especially discussing the fire lessons from this disaster as affecting different engineering materials. 2000 w. Jour Assn of Engng Socs—March, 1907. No. 83767 C.

Reinforced Concrete Construction. Lewis A. Hicks. Information in regard to reconstruction work, especially the use of reinforced concrete. 1400 w. Min & Sci Pr—April 20, 1907. No. 83963.

A Year of Reconstruction. Charles Derleth, Jr. Gives a brief review of the

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### San Francisco

extent of structural damage within the earthquake and fire belt, with an outline of the rehabilitation accomplished during the past year. Ills. 5500 w. *Min & Sci Pr*—April 20, 1907. No. 83962.

The San Francisco of To-day. T. A. Rickard. Illustrations showing the progress of reconstruction, and descriptions of some of the work. 2500 w. *Min & Sci Pr*—April 20, 1907. No. 83961.

The Effects of the Earthquake and Fire on Steel Structures in San Francisco (Die Wirkungen von Erdbeben und Feuer auf die Eisenkonstruktionen in San Francisco). Prof. Kohnke. Gives the conclusions reached by the writer after personal investigation. Ills. 2700 w. *Stahl u Eisen*—April 24, 1907. No. 84130 D.

The Effects of the San Francisco Earthquake of April 18th, 1906, on Engineering Constructions. Reports of a general committee and of six special committees of the San Francisco Association of Members of the Am. Soc. C. E. Ills. 20700 w. *Pro Am Soc of Civ Engrs*—March, 1907. No. 83329 E.

The Effects of the San Francisco Earthquake of April 18, 1906, on Engineering Constructions. Continued discussion of reports of committees of the San Francisco Association of members of the Am. Soc. of Civ. Engrs. 15400 w. *Pro Am Soc of Civ Engrs*—Aug., 1907. No. 86642 E.

See also Earthquake, Fireproof, Reinforced Concrete, and Steel Buildings, under CONSTRUCTION.

### Sewers.

See under Municipal.

### Shafts.

Sinking a Shaft with Steel and Concrete Lining in Soft Ground. W. E. Wagner. An interesting account of successful waterproofing under heavy pressure. The sinking of a shaft for a shot tower, at East Alton, Ill. 1800 w. *Eng News*—Feb. 21, 1907. No. 82530.

### Shingles.

Asbestos Shingles. Charles H. Stringer. Explains the advantages of the use of composition of fibre and cement. 1200 w. *Ins Engng*—Oct., 1907. No. 87855 C.

### Society Buildings.

The Engineering Societies Building in New York. An illustrated article comparing this new building, its arrangements and facilities, with those of some of the buildings, devoted to similar purposes, in other parts of the world. 2500

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w. *Cassier's Mag*—May, 1907. No. 84048 B.

### Specifications.

The Enforcement of Specifications. Charles B. Dudley. Presidential address before the Am. Soc. for Testing Materials. 9500 w. *Ir Age*—June 27, 1907. No. 85293.

### Stables.

Revolutionary Ideas in Stable Architecture. An illustrated description of a fine stable building and auction mart in New York city. A steel skeleton structure having many innovations and improvements of interest. 1200 w. *Archts & Bldrs' Mag*—Dec., 1906. No. 80952 C.

### Stack.

Erecting an Extension to the Steel Smokestack of a Copper Smelting Plant. Drawings and information in regard to an interesting piece of work at Douglas, Ariz., where a new section of stack was erected on a framework, and moved onto the old stack. 900 w. *Eng News*—Feb. 7, 1907. No. 82189.

### Steam Shovels.

Steam Shovels and Steam Shovel Work in Railway Construction. Discusses the recommendations of the Committee on Roadway of the American Railway Engineering and Maintenance of Way Assn., based on replies to a circular letter of inquiry. 2000 w. *Eng News*—April 11, 1907. No. 83563.

Cost of Steam Shovel Work. John C. Sesser. Reprinted from *Bul. 81*, Nov., 1906, *Am. Ry. Engng. & Main. of Way Assn.* Reports of the Big Shoal and Little Shoal cut-off work, on the Burlington System. 2200 w. *R R Gaz*—Dec. 21, 1906. No. 81211.

### Steel Buildings.

The Construction of the Seligman Building, New York. Interesting work in connection with the erection of a 11-story, fireproof, steel frame building is illustrated and described. 2500 w. *Eng Rec*—July 13, 1907. No. 85545.

The Steelwork of the City Investing Company's Building, New York. Notes concerning the steel superstructure of this building. Plans. 2500 w. *Eng Rec*—Dec. 1, 1906. No. 80819.

Some Structural Features of the City Investing Company's Building, New York. Illustrated notes concerning a 32-story building, rising to a height of 486 feet above the sidewalk, under construction in the Wall St. district. 3000 w. *Eng Rec*—Nov. 24, 1906. No. 80574.

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### Steel Buildings

Steel-Work in the Palace Theatre, London. Illustrated description of a good example of the application of the cantilever system to this class of work. Plates. 900 w. Engng—Dec. 28, 1906. No. 81536 A.

The Extension of the Tribune Building, New York. An illustrated description of the work of increasing a building from 10 to 20-stories, and the methods of providing for the stresses. 4500 w. Eng Rec—June 1, 1907. No. 84699.

The Keyser Building, Baltimore. A 10-story steel-cage structure of L-shape plan is illustrated and described. 1000 w. Eng Rec—Jan. 12, 1907. No. 81582.

"Common Practice" and Common Defects in Structural Steel Work. Edward Godfrey. Points out some of the absurdities in designs of steel structures, giving examples of actually-observed instances of violations of common principles of mechanics. Ills. 4500 w. Eng News—April 11, 1907. No. 83565.

The Condition of the Steel Work in a San Francisco Building Erected 13 Years Ago. Frank B. Gilbreth. Describes the building in detail, and reports the effect of the earthquake, and the fire, giving an illustrated description of the condition of the steel-frame and gives the conclusions from its inspection. 1800 w. Eng News—Jan. 31, 1907. No. 82023.

Higher Structures. C. Derleth, Jr. Gives a discussion of the literature and a survey of American and English treatment for the analysis of complex framed structures, with remarks on the latest edition of the work of Professors Merriam and Jacoby. 3500 w. Cal Jour of Tech—Aug., 1907. No. 87097.

See also Anchorages, Beams, Buildings, Factories, Foundations, Hotels, Lookout Towers, San Francisco, Stables, Theatres, Towers, Tunnels, Underpinning, and Wind Pressure, under CONSTRUCTION; Angles, Beams, and Structural Steel, under MATERIALS OF CONSTRUCTION; and Beams, under MEASUREMENT.

### Stresses.

The Factor of Safety. J. P. E. C. Stroymer. Presidential address delivered to Inst. of Civ. Engrs., Manchester Assn. of Students. An interesting discussion of the origin of the expression "factor of safety," and its application to engineering. 4800 w. Engr, Lond—March 8, 1907. Serial. 1st part. No. 83124 A.

### Structural Engineering.

Some Commercial Features of Structural Engineering. Emil Gerber. Also discussion. Discusses briefly the mate-

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rials, design, and some details of construction. 8000 w. Pro Engrs' Soc of W Penn—April, 1907. No. 84027 D.

### Tanks.

Strength of Air Pressure Tanks. Ira J. Owen. Formulæ and specifications for the construction of steel sprinkler pressure tanks, discussing causes of explosion. Ills. 2500 w. Ins Engng—Sept., 1907. No. 87223 C.

### Theaters.

Lincoln Square Theater. F. W. Mayes. Report on the design, construction and arrangement for public safety and fire protection. Ills. 2000 w. Ins Engng—March, 1907. No. 83588 C.

The Technical Details of the Albert Schumann Theatre in Frankfurt (Die Technischen Einrichtungen des Albert Schumann-Theaters in Frankfurt). Julius Weil. Gives details of the design and construction of this unique steel structure. Ills. 1500 w. Serial. 1st part. Elektrotech u Polytech Rundschau—June 5, 1907. No. 85646 D.

### Tile.

Suggestions for Setting Tile. Karl Langenbeck. Suggestions for the tiling of walls and floors. Ills. 2500 w. Met Work—Feb. 16, 1907. No. 82297.

Cohesive Fireproof Tile Construction. Describes recent work where improved terra-cotta tiles are used. The new Custom House in New York City, and new Madison Square Presbyterian church, furnish examples of domes constructed of this material, and other work is described. 1700 w. Sci Am—March 23, 1907. No. 83147.

### Towers.

A Steel Clock Tower. Illustrates and describes details of a 160-ft. steel tower in Brooklyn. 600 w. Eng Rec—Jan. 12, 1907. No. 81576.

The Tower of the Metropolitan Life Building, New York. Illustrated description of a tower about to be erected in connection with the Home Office Building of this company. 1200 w. Eng Rec—Jan. 12, 1907. No. 81584.

The 48-story Tower of the Metropolitan Life Building, New York City. Brief description of the general system of framing, with diagrams. 600 w. Eng News—Jan. 31, 1907. No. 82028.

The Steel Framework of the Metropolitan Tower. Illustrated detailed description of the steel work, for the tower of the Metropolitan Life Insurance Co.'s building in New York City. 3000 w. Eng Rec—Feb. 9, 1907. No. 82222.

### Towers

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## Tunnels

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## Tunnels

A Twentieth Century Campanile. Illustrations showing comparison of the Metropolitan Life Insurance Co.'s tower, 658 ft. above the sidewalk, with other high structures, with remarks on features of construction. 1300 w. Sci Am—March 30, 1907. No. 83298.

### Tunnels.

Progress on the Manhattan Work of the Pennsylvania, New York & Long Island R. R. An illustrated article describing the tunnel work in progress under 32d and 33d Sts., Manhattan, which will connect the East River tunnels with the great terminal station. 4000 w. Eng Rec—Nov. 10, 1906. No. 80324.

The Pennsylvania Tunnels Across Manhattan Island. Illustrates and describes the methods and plant used in driving the tunnels under 32d and 33d streets from the shafts at First avenue to the terminal station at Seventh avenue. The double-track tunnel is being driven through rock without disturbing the surface. 2200 w. R R Gaz—Nov. 2, 1906. No. 80203.

Progress of the Pennsylvania Tunnels Under Manhattan Island. Illustrates and describes changes made and the progress of this great engineering work. 2000 w. R R Gaz—July 12, 1907. No. 85516.

The Construction of the Pennsylvania R. R. Tunnels under the North River at New York City. James Forgie. An illustrated detailed description of this great engineering feat. A second paper will record the methods of working in the kind of ground encountered, especially the soft river mud. Also editorial. 11500 w. Eng News—Dec. 13, 1906. No. 80968.

The Pennsylvania Tunnels Under the North River. An interesting illustrated description of the tunnels and methods of construction, the care given the men, the plant, etc. 4500 w. R R Gaz—Dec. 28, 1906. No. 81304.

The Cortlandt Street Tunnels and Terminal Building, New York. An illustrated article explaining the magnitude of the work and its present state. 1800 w. Sci Am—Jan. 26, 1907. No. 81926.

Pennsylvania Railroad Tunnel Extension Into New York City. A. J. County. Abstract of an address before the Wharton Sch. Assn., Univ. of Penn. Outlines present conditions of transportation around Manhattan, and describes the project for improving the works now under construction by the Pennsylvania R. R. Map. 4200 w. R R Gaz—April 12, 1907. No. 83574.

The Second Bergen Hill Tunnel of the

Lackawanna R. R. An illustrated description of this new tunnel being constructed in connection with extensive terminal improvements at Hoboken, N. J. 1700 w. Eng Rec—Jan. 12, 1907. No. 81575.

Grade Correction in the Battery Tunnel. The correction of irregularities in the alignment of this tunnel between New York and Brooklyn, the difficult and delicate work of raising the roof and depressing the invert under a heavy pressure, is illustrated and described. 2000 w. Eng Rec—March 2, 1907. No. 82729.

Driving Concrete Piles Below the Battery Tunnel, New York. Describes the provision made for possible vibrations and abrupt changes of support in the tubes driven under the East River, where they pass through sand. 1600 w. Eng Rec—June 8, 1907. No. 84853.

An Official Examination of the Battery Tunnel, New York. Extracts from a recent report submitted by Nelson P. Lewis. 2000 w. Eng Rec—July 13, 1907. No. 85538.

Completion of Grade Rectification in the Battery Tunnel, New York. Illustration with brief explanation of the work. 1200 w. Eng Rec—July 20, 1907. No. 85795.

The Present Condition of the Battery Tunnel Under the East River. From a report by George S. Rice to the Public Utilities Commission, detailing the present status of the work. 1500 w. Eng News—Sept. 19, 1907. No. 87116.

The Freezing Process in the Battery Tunnel, New York. Gives an explanation of the method planned to be used in cases where alterations were required necessitating the removal of the upper segments of the lining. Ills. 3000 w. Eng Rec—Dec. 15, 1906. No. 80991.

Applications of Electricity in the Belmont and Pennsylvania Tunnels. Illustrates and describes applications made of electric power in the construction of these tunnels. 2800 w. Elec Wld—Jan. 12, 1907. No. 81619.

Grade Correction and Pile Foundations in the East River Tunnel of the New York Rapid Transit Subway. Explains the conditions which led to the use of pile foundations to assure permanent stability, and the method of carrying out the work. 2000 w. Eng News—June 27, 1907. No. 85303.

The Belmont Tunnel, New York. Describes briefly the construction of the two parallel single-track tunnels under the East River at 42nd St. Ills. 2500 w. Eng Rec—June 8, 1907. No. 84857.



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## Tunnels

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Railway Tunnels to Manhattan Island. Information of interest concerning the 14 subaqueous tubes under construction to connect Manhattan Island with Long Island and New Jersey. Ills. 2500 w. Elec Rv Rev—Nov., 1906. No. 80421.

The Romance of Tunnel Building. Arthur B. Reeve. An illustrated account of the 16 subaqueous tunnels built and building under the rivers around New York City, the dangers and difficulties, and methods of construction. 5600 w. World's Work—Dec., 1906. No. 80851 C.

Development of Tunneling in New York City. S. D. V. Burr. Illustrates and describes work that has been accomplished beneath the city and under the rivers. 5000 w. Ir Age—Jan. 10, 1907. No. 81512.

The New York Subaqueous Tunnels. Charles Prelini. The present number outlines the tunnel work in progress round New York City, and later articles will describe four of the more important tunnels. Ills. 2000 w. Engng—March 8, 1907. Serial. 1st part. No. 83113 A.

Mining Operations in New York City and Vicinity. H. T. Hildage. A general description of some of the methods and appliances used in the opening-up of a "mine" in a large city, and a brief description of some of the "mines" now being developed in New York. 10500 w. Bul Am Inst of Min Engrs—May, 1907. No. 85272 C.

Underground Workings in New York City. H. T. Hildage. Considers especially work in soft ground and the methods used, illustrated by the large undertakings in progress in New York City. 6000 w. Engineering Magazine—Oct., 1907. No. 87283 B.

Driving the Gunnison Tunnel. Illustrated description of the driving of this tunnel for the purpose of diverting the waters of the Gunnison river into the Uncompahgre valley in Southwestern Colorado. 1800 w. Min Rept—Dec. 20, 1906. No. 81225.

The Gunnison Tunnel of the Uncompahgre Irrigation Project. M. G. Doll. Illustrates and describes the methods and progress made in driving a tunnel nearly six miles in length through material ranging from soft mud to hard rock, nearly five miles being driven from two headings without intermediate shafts. 2700 w. Compressed Air—Dec., 1906. No. 80955.

The Detroit River Tunnel of the New York Central Lines. Illustrated description of the construction and design of this

subaqueous tunnel consisting of riveted steel tubes built on shore, floated and sunk and surrounded by a monolithic mass of concrete. The interiors of the tubes are lined also with concrete 20 in. thick. 3000 w. Eng Rec—March 2, 1907. No. 82720.

Subaqueous Tunnel at Detroit. Illustrated description of the method of construction, which consists of dredging a channel across the river, laying sections of tube in the ditch, filling around and over them with concrete, and then pumping out the water. 1500 w. Ry & Loc Engng—Sept., 1907. No. 86705 C.

The Detroit River Tunnel. An illustrated description of the methods used in sinking steel shells in a dredged trench. 3000 w. Eng News—Oct. 31, 1907. No. 87984.

Progress of work in Lowering the Tunnels Under the Chicago River. William Artinngstall. An illustrated account of progress and methods in the lowering of the three street railway tunnels under the river to give the required depth of 26 ft. in the Chicago River. 2000 w. Eng News—March 7, 1907. No. 82796.

Progress in Lowering the Tunnels Under the Chicago River. An illustrated report of progress in the lowering of the roofs of two street railway tunnels, and description of methods. 4000 w. Eng Rec—April 13, 1907. No. 83705.

Methods and Cost of Constructing a Tunnel Through Clay by the Shield Method. Lawrence Ave. Intercepting Sewer, Chicago, Ill. 1800 w. Engng Con.—Feb. 6, 1907. No. 82160.

The Kaw River Tunnel of the Kansas City Water Works. C. K. Allen. Illustrated detailed description of the construction of this tunnel. 3000 w. Eng Rec—Nov. 17, 1906. No. 80504.

The Reconstruction of the Eighth Street Tunnel, Kansas City, Mo. Describes work for the Metropolitan Street Railway Co., which required changing the grade in the tunnel. 1700 w. Eng Rec—Oct. 5, 1907. No. 87451.

The Kicking Horse River Tunnel of the Canadian Pacific Ry. Brief illustrated description of this new tunnel near Paliser, B. C. 1000 w. Eng News—April 18, 1907. No. 83895.

Cost and Methods of Construction of Tunnel for Water Pipes Under Mystic River, Boston, Mass. Caleb Mills Saville. An illustrated description of the work with tables of itemized costs. 2500 w. Eng News—Sept. 26, 1907. No. 87245.

The Channel Tunnel Project. Abstract Translation from *Génie Civil*, discussing

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## Tunnels

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## Underpinning

the best means of effecting the transit of the channel between England and France other than the methods in use. Describes the project proposed by the French. 2200 w. Engr, Lond—Nov. 9, 1906. No. 80500 A.

The Simplon Tunnel. Francis Fox. A very interesting account of the construction of this great engineering work and matters relating to it. Also discussion and correspondence. Ills. 20500 w. Inst of Civ Engrs—No. 3651. No. 86369 N.

Power Equipment of the Simplon Tunnel. Illustrates the hydraulic turbine built for the Brigue, Switzerland, power station, and describes features of the plant. 1400 w. Ry & Engng Rev—Jan. 26, 1907. No. 82007.

The Great Tunnel. An illustrated article dealing with the construction and use of the Simplon tunnel. 1600 w. Ry & Loc Engng—April, 1907. No. 83528 C.

The Boring of the Simplon Tunnel (Come Venne Forato il Sempione). Describes the geology, the drills used, the difficulties encountered, pumping and ventilating arrangements, etc. Ills. 1500 w. L'Elettricità—May 17, 1907. No. 84920 D.

The Construction of the Simplon Tunnel (Der Bau des Simplontunnels). Herr Pressel. A complete description of this work. Ills. Serial. 1st part. 4200 w. Glasers Ann—May 15, 1907. No. 84957 D.

The Machinery Used in the Construction of the Tauern Tunnel (Die Maschinellen Anlagen beim Bau des Tauern-tunnels). K. Brabbée. Illustrated description of drilling machines, pumping plant, power plant, etc. 6500 w. Zeitschr d Ver Deutscher Ing—May 25, 1907. No. 84984 D.

The Construction of the Gattico Tunnel of the Santhià-Borgomanero-Arona Railway (Bauausführung des Gattico-Tunnels im Zuge der Santhià-Borgomanero-Arona-Bahn). Gaetano Crugnola. The first part of the serial gives plan and profile of this Italian line and describes the power, shaft, and pumping plants. Ills. 2500 w. Serial. 1st part. Schweiz Bau—July 6, 1907. No. 86254 D.

The Karawanken Tunnel. Illustrates and describes the construction of this tunnel in Austria, especially interesting because of the rapidity of execution. 1200 w. Engr, Lond—May 24, 1907. No. 84759 A.

The Tunnels Under the Seine for the Metropolitan Railway at Paris. R. Bonnin. Notes on very interesting work not described in a previous article in the issue of Feb. 15, 1906. Ills. 1200 w. Eng News—April 11, 1907. No. 83567.

The Seven-Foot Polk Street Water

Tunnel, Chicago. Explains why the new tunnel was necessary and gives an illustrated description of its construction. 3000 w. Eng Rec—March 16, 1907. No. 83065.

See also Contractor's Plant, Earth Pressures, and Underpinning, under CONSTRUCTION; and Pipe Subways, under MUNICIPAL.

## Tunnel Lining.

Cost of Lining a 4000-ft. Tunnel with Concrete and in Part with Brick. Gives itemized cost of lining a single-track railway tunnel. 1500 w. Engng-Con—July 17, 1907. No. 85769.

Lining a Tunnel with Concrete. Illustrates and describes work on the Southern Ry. in Indiana. 2000 w. Eng Rec—Oct. 12, 1907. No. 87565.

Tunnel Lining Work in the Far West. An illustrated description of the relining of the Hodges Pass tunnel on the Oregon Short Line Ry. 1400 w. Eng News—Dec. 6, 1906. No. 80845.

Method of Relining the Hodges' Pass Tunnel, Oregon Short Line Ry. An illustrated explanation of the methods of work adopted. 800 w. Engng Con—Feb. 20, 1907. No. 82477.

## Underpinning.

Underpinning a Three-Track Subway. Illustrates and describes methods used for unusually heavy trench bracing. 1500 w. Eng Rec—March 2, 1907. No. 82735.

Methods Used in Underpinning the Singer Building, New York. Describes the conditions to be met and the arrangement for temporary support of a wall on needle-beams until the caisson foundations were completed. Ills. 2000 w. Eng Rec—March 2, 1907. No. 82725.

Shoring a Fifteen-Story Office Building in Chicago. Briefly describes the Champlain store and office building, and the shoring required during the construction of an adjacent building. Ills. 3700 w. Eng Rec—March 2, 1907. No. 82710.

Cantilever Underpinning in Boston. Illustrates and describes ingenious cantilever underpinning with suspended fulcrums, used in the construction of the Boston Transit Commission's subway. 1000 w. Eng Rec—June 15, 1907. No. 85057.

A Problem in Underpinning. Discusses the underpinning employed at Mount Royal pumping station, Baltimore. Extracts from report of Richard C. Sandlass. 1200 w. Eng Rec—July 27, 1907. No. 85945.

A Combined Underpinning and Sheet-

## CIVIL ENGINEERING

### Warehouses

ing Job. Describes complicated work in the construction of a six-story steel-cage bank building at the S.-W. corner of Murray St. and Broadway, New York City. Ills. 2000 w. Eng Rec—Sept. 7, 1907. No. 86786.

Underpinning Adjacent to the Silver-smiths' Building, New York. Explains conditions adjacent to the site for this 20-story, steel-cage building, and illustrates and describes methods of supporting the adjoining buildings. 3000 w. Eng Rec—Sept. 28, 1907. No. 87310.

### Warehouses.

A Warehouse Building of Composite Construction. Illustrated description of an addition to a building in Brooklyn, mainly of reinforced concrete. 2000 w. Eng Rec—Jan. 5, 1907. No. 81494.

The Evolution of the Modern Warehouse. A. O. Elzner. Brief descriptions of old and new structures, especially illustrating a reinforced concrete fireproof building. 2000 w. Archt Rec—May, 1907. No. 83931 C.

The Storage Warehouse of the Fireproof Storage Co., Cleveland, O. Describes the erection of a reinforced concrete building with self-supporting shale-brick walls, 6 stories high. Ills. 1500 w. Eng Rec—March 30, 1907. No. 83368.

A Concrete Warehouse with Concrete Doors and Water Tank. Illustrated detailed description of a reinforced-concrete warehouse in Kansas City, Mo. 1800 w. Eng News—July 25, 1907. No. 85885.

The New Warehouse of the Newark Warehouse Company. Illustrates and describes a large 6-story fireproof building

### MATERIALS OF CONSTRUCTION

### Beams

in Newark, N. J., combining the facilities of a freight delivery and receiving terminal and a storage warehouse. 4500 w. Eng Rec—Aug. 10, 1907. No. 86315.

Newark Warehouse of the Central Railroad of New Jersey. Photograph, drawings, and description. 700 w. R R Gaz—Aug. 30, 1907. No. 86659.

### Waterproofing.

Mistakes in Waterproofing. Edward W. De Knight. Read before the Am. Soc. Test. Mat. Discusses the importance of design, the use of proper materials, and their application. 3000 w. Cement Age—Nov., 1906. No. 80420.

Waterproofing Concrete—The Elastic vs. the Rigid Method. Edw. W. De Knight. Considers the treating concrete to make it, in itself, impermeable and protecting concrete with something apart therefrom, to make it waterproof. 3300 w. Cement—Jan., 1907. No. 82279 C.

### Wind Pressure.

The Chance of a Hurricane. A. P. Trotter. A discussion of the maximum wind pressure to be adopted in investigating the effect of wind on buildings and engineering structures. 3000 w. Engng—Aug. 23, 1907. No. 86726 A.

### Workmen's Homes.

The Construction of Employees' Homes by German Electric Railways. An illustrated article giving designs and suggestions for homes for workmen, taken from an elaborate work issued by the Prussian Minister of Public Works. 3000 w. St Ry Jour—May 4, 1907. No. 84229.

## MATERIALS OF CONSTRUCTION

### Adhesion.

The Adhesion of Mortar and Concrete. R. Feret. Gives facts relating to normal and to tangential adhesion, and things that affect the adhesion to different materials. 1400 w. Cement—Nov., 1906. No. 80759 C.

### Angles.

Tension Tests of Steel Angles with Various Types of End-Connection. Frank P. McKibben. Read before the Am. Soc. for Test. Mat. Reports tests of 33 steel angles, such as are used for tension members in riveted framed structures. 2500 w. Eng News—Aug. 22, 1907. No. 86510.

### Asbestos Wood.

Fire Test of Asbestos Wood. C. L.

Norton. Illustrated account of test, proving the excellence of its non-conducting and non-radiating properties. 1000 w. Ins Engng—June, 1907. No. 85195 C.

### Australian Woods.

The Hard Woods of Western Australia. Information from a valuable report entitled "The Physical Characteristics of the Hard Woods of Western Australia," giving results of over 16,000 carefully-conducted tests on various samples of timber. 3500 w. Engng—Jan. 11, 1907. No. 81743 A.

### Beams.

Fundamental Ideas on the Strength of Beams. John D. Adams. A graphical presentation of the stresses in a bending beam, with explanation. 1500 w. Mach,

# CIVIL ENGINEERING

## Brick

N Y—March, 1907. Serial. 1st part. No. 82766 C.

The Elastic Limit of a Rod under Tension and Bending Strain (Der elastisch eingespannte, auf Zug und Biegung beanspruchte Stab). Ivan Arnsvelevic. Mathematical treatment. 2100 w. Oest Wochenschrift f d Öffentlichen Baudienst—Jan. 26, 1907. No. 82935 D.

A New Method of Calculation of Beams. A. P. Jacob. Describes a method for computing the section of a reinforced concrete beam. 500 w. Cement Age—March, 1907. No. 83163.

Strains in Beams of Rectangular Section with Curved Axes (Die Beanspruchung stabförmiger Träger mit gekrümmter Mittellinie). C. Pfeiderer. Mathematical treatment. Diagrams. 1400 w. Zeitschrift des Vereines Deutscher Ingenieure—Feb. 9, 1907. No. 82923 D.

Fire and Load Test of a Reinforced Concrete Beam. H. B. Macfarland. Gives details of an experimental fire and load test. Ills. 1000 w. Eng News—March 21, 1907. No. 83205.

Shearing Strains in Freely Suspended Cast Iron Beams under Deflection Tests (Über die Beanspruchung freiaufhängender Träger durch Stoss mit Berücksichtigung der Schlagbiegeprobe für Gusseisen). A. Gessner. Description of testing apparatus and mathematical treatment of theory. Ills. 6700 w. Zeitschrift Des Österreichischen Ingenieure und Architekten Vereines—Nov. 30, 1906. No. 81809 D.

See also same title, under CONSTRUCTION; and Reinforced Concrete, under MATERIALS OF CONSTRUCTION.

## Brick.

Tests and Theories in Their Relation to Specifications for Bricks. Jos. A. Shinn. Gives a report of tests, with explanatory remarks and discussion of the qualities of various kinds of bricks. 3000 w. Pro Engrs' Soc of W Penn—Nov., 1906. No. 80232 D.

The Story of the Brick. Prof. Edgar J. Banks. Reviews the history of early brick making, and shows how valuable they are in determining the age of ruins. 1200 w. Sci Am—April 6, 1907. No. 83456.

Sand Lime Brick Manufacture and Use. Description of old and new methods of manufacture, with illustrations of uses of this material. 1000 w. Munic Engng—Jan., 1907. No. 81386 C.

Strength of Brick and Brick Piers. James E. Howard. Read at convention of the Nat. Brick Mfrs. Assn. Gives results of tests made at the Watertown

## MATERIALS OF CONSTRUCTION

## Cement

Arsenal. 2200 w. Eng Rec—Feb. 23, 1907. No. 82528.

Sand-Lime Brick. E. W. Smythe. Read before the Wis. Clay Workers' Association. Reviews the history of this material and its use, describing the processes of manufacture used by different workers. 1800 w. Sci Am Sup—May 25, 1907. No. 84548.

Strength and Fire Protection of Brick Walls. Alfred Stone. A discussion of the carrying capacity of brick walls, their ability to stand upright and resist wind pressure and vibration, and the fire resistance of brick walls of certain thicknesses. 2700 w. Ins Engng—Sept., 1907. No. 87222 C.

## Building Stone.

The Characteristics of Good Building Stones. R. D. George. Discusses their essential qualities, such as strength, durability, workability and color, and the facts determining these qualities. 6000 w. Ores & Metals—March 20, 1907. No. 83231.

## Cement.

Observations on the Testing and Use of Portland and Natural Cements. E. S. Larned. A discussion of tests and of facts from the experience of the writer in the use of this material, with general discussion. 7500 w. Jour N Eng W-Wks Assn—March, 1907. No. 83336 F.

Comparative Strength Tests of Cement Mortar (Vergleichende Festigkeitsversuche an Körpern aus Zementmörtel). M. Grübler. Description of apparatus and results obtained. Illus. 5700 w. Zeitschrift des Vereines Deutscher Ingenieure—Feb. 2, 1907. No. 82920 D.

Recommendations for the Uniform Supply and Testing of Portland Cement (Bestimmungen für die Einheitliche Lieferung und Prüfung von Portland-Zement). Report of a Committee of the Austrian Society of Engineers and Architects, giving recommendations for standard sizes and weights of packages and tests. 3000 w. Zeitschr d Oest Ing u Arch Ver—May 17, 1907. No. 84973 D.

Simple Tests of Portland Cement. W. Purves Taylor. Gives simple tests that may be carried out by the small consumer. Tests for soundness, time of setting, purity, and strength. 1400 w. Engng-Con—July 17, 1907. No. 85770.

Notes on the Le Chatelier Test. W. Lawrence Gadd. Gives facts in connection with the behavior of rotary-made cement, based on hundreds of tests by the Le Chatelier method, and showing that under present conditions it is possible for a false conclusion to be drawn. 2800 w. Engr, Lond—Sept. 13, 1907. No. 87216 A.

# CIVIL ENGINEERING

## Cement

## MATERIALS OF CONSTRUCTION

## Concrete

Simple Tests of Portland Cement. W. Purves Taylor. Gives simple tests, that can be made by small consumers, for soundness, time of setting, purity, and strength. 1500 w. Cement—Aug., 1907. No. 86833 C.

Constancy of Volume in Portland Cement. A résumé is given as the result of study by E. D. Campbell, and A. H. White at the University of Michigan. Gives conclusions of value to users of cement in industrial work. 1100 w. Min Rept—Nov. 22, 1906. No. 80595.

The Aging of Portland Cement. H. Spencer Conover. Discussion of why it becomes quick setting on aging. Also views of other experts. 4000 w. Cement Age—Dec., 1906. No. 80947.

The Specific Gravity of Portland Cement. David Butler Butler. A report of results obtained by experimental investigations with a summary of the conclusions. 1000 w. Inst of Civ Engrs. Abstract of paper. No. 3625. No. 82035 N.

Solubility of Portland and Slag Cement (Ueber den Einfluss einiger Lösungen auf Portland und Schlackenzement). Heinrich Renezeder. Description of tests of mixtures of the two in different proportions. Ills. 1300 w. Oest Wochenschr f d Oeff Baudienst—Jan. 19, 1907. No. 82338 D.

A Review of the Chemistry of Portland Cement. F. H. Mason. Outlines the method of manufacture, and reviews the researches of M. Le Chatelier in regard to the setting and hardening of cement. 2000 w. Min & Sci Pr—June 8, 1907. No. 84864.

Portland Cement as Manufactured at Fordwick, Virginia. R. B. Colton. Describes the manufacture, the materials used, the qualities, etc. 1600 w. Yale Sci M—Dec., 1906. No. 81057 C.

Cement for Building Construction. Report of the Committee of the National Fire Protection Association. 5500 w. Eng Rec—June 8, 1907. No. 84856.

The Effect of Oil on Cement Mortar. R. C. Carpenter. Read before the Am. Soc. for Test Materials. A brief report of investigations. 400 w. Eng News—July 4, 1907. No. 85473.

Qualities and Methods of Using Cement. S. B. Newberry. Abstract from a paper before the Ohio Bldrs. Sup. Assn. Considers qualities of various cements and methods of use. 2000 w. Munic Engng—Oct., 1907. No. 87393 C.

The Relations between Highly-Basic Blast Furnace Slags and Cement from the Standpoint of Physical Chemistry (Ueber

Chemisch-Physicalische Verhältnisse der Hochbasischen Hochofenschlacken und Zemente). Karl Zulkowski. 3300 w. Serial. 1st part. Stahl u Eisen—July 17, 1907. No. 86228 D.

The Industrial Relations of the American Cement Industry. Edwin C. Eckel. Demonstrating that its phenomenal growth has not yet overtaken the normal demand, and that natural conditions while fostering large units in manufacturing, prohibit complete centralization or trust formation. 2500 w. Engineering Magazine—Jan., 1907. No. 81190 B.

The Economy of the Long Kiln. E. C. Soper. Gives results of tests on 7' x 60' and 8' x 110' rotary kilns burning natural gas, discussing the kiln question. 1300 w. Pro Am Soc of Mech Engrs—June, 1907. No. 84641 F.

See also Hydraulic Cement, Mortar, Ore Cement, Sand, and Slag Cement, under MATERIALS OF CONSTRUCTION.

### Cement Laboratory.

The Lesley Cement Laboratory, University of Pennsylvania. An illustrated description of this laboratory for instruction in standard cement testing and for research in concrete work. 1500 w. Eng Rec—Nov. 3, 1906. No. 80262.

The Lesley Cement Laboratory. Edgar Marburg. Illustrated detailed description of this feature of the new building for the engineering departments of the University of Pennsylvania. 2000 w. Cement Age—Nov., 1906. No. 80419.

### Concrete.

Concrete and Concrete Work. Ernest McCulloch. The present article considers reinforced concrete as a building material. 1400 w. Mfrs' Rec—Nov. 8, 1906. Serial. 1st part. No. 80271.

The Fatigue of Concrete. J. L. Varr Ornum. An illustrated report of research work including both concrete blocks in compression and reinforced concrete subjected to transverse loading. 8000 w. Pro Am Soc of Civ Engrs—Dec., 1906. No. 81299 E.

The Value of Brick in Concrete. Loren E. Hunt. Gives details of test work and results obtained with broken brick as a substitute for rock in concrete. 3000 w. Cal Jour of Tech—Dec., 1906. No. 81202.

Safety in Concrete Construction. Richard L. Humphrey. Presidential address before the Nat. Cement Users Assn. Discusses the test of the San Francisco earthquake upon this material, and also some of the abuses to which it is subjected. 3000 w. Eng Rec—Jan. 19, 1907. No. 81725.

# CIVIL ENGINEERING

## Concrete

## MATERIALS OF CONSTRUCTION

## Concrete Aggregates

**Concrete Surface.** Henry H. Quimby. Discusses tooling the surface, or the removal of the film and the exposure of the clean aggregate by any method, to give a pleasing surface. Also the effect of scrubbing the fresh surface with a brush and water. 2500 w. Cement—Jan., 1907. No. 82277 C.

**A Normal Concrete.** Louis H. Gibson. Discusses the question of the formation of the aggregate in the manufacture of concrete. 2500 w. Munic Engng—March, 1907. No. 82693 C.

**Cost of Fence Posts and Other Concrete Work of Dellwood Park.** Describes concrete work at an amusement resort in Illinois, giving a report of costs. 1400 w. Eng Rec—March 23, 1907. No. 83213.

**The Laws of Proportioning Concrete.** William B. Fuller and Sanford E. Thompson. A detailed account of experimental tests made, with results and conclusions, giving many tables, and much valuable information. Ills. 17500 w. Pro Am Soc of Civ Engrs—March, 1907. No. 83328 E.

**The Laws of Proportioning Concrete.** Interesting statements presented by Sanford E. Thompson, supplementing a paper read before the Am. Soc. of Civ. Engrs. on April 17. 4000 w. Eng Rec—May 11, 1907. No. 84324.

**Prevention of Freezing in Concrete by Calcium Chloride.** Richard K. Meade. Gives results of a series of experiments made to investigate the effect which calcium chloride exercises in preventing the freezing of mortar. 2200 w. Eng Rec—April 20, 1907. No. 83837.

**The Wear of the Inter-Tidal Space On Concrete Marine Structures.** Editorial discussing the possible disintegration of concrete under certain conditions. 1500 w. Eng News—July 18, 1907. No. 85738.

**Concrete Walls and Floors.** E. P. Goodrich. Discusses some of the points involved in the use of reinforced concrete, especially for walls and floors, explaining some of the characteristics of this material. 4000 w. Am Archt—May 4, 1907. Special No. No. 84360 E.

**Concrete Failures.** John J. Flather. Briefly considers the causes of failure, discussing the important examples. Ills. 4000 w. Engrs' Soc of Univ of Minn—Year Book, 1907. No. 84632 N.

**The Expansion of Concrete with or Without Reinforcement (Zur Frage der Dehnungsfähigkeit des Betons mit oder ohne Eiseneinlagen).** C. Bach. A review of results and conclusions of elaborate tests on this subject. Ills. 5000 w. Zeit-

schr d Ver Deutscher Ing—June 29, 1907. No. 85683 D.

**Notes on Expansion and Contraction of Concrete Structures.** A. C. Lewerenz. Observations as to the effect of expansion and contraction on concrete and reinforced concrete and reinforced concrete structures made at a U. S. Navy Yard. Also editorial. Ills. 2400 w. Eng News—May 9, 1907. No. 84295.

**The Architectural Problem of Concrete.** A symposium on the artistic design of reinforced-concrete and concrete structures, giving the opinions of many architects. 13500 w. Am Archt—May 4, 1907. Special No. No. 84358 E.

**The Idiomatic Use of Concrete.** Evarts Tracy. A brief discussion of the laws governing the use of concrete from the artistic viewpoint. 1200 w. Am Archt—May 4, 1907. Special No. No. 84359 E.

**Effect of Steam Curing on the Crushing Strength of Concrete.** A report of investigations made to determine the efficiency of this method, with conclusions. 1500 w. Eng News—Sept. 5, 1907. No. 86757.

**The Permeability of Concrete and Methods of Waterproofing.** Richard H. Gaines. Gives the result of an investigation being carried on by the N. Y. Board of Water Supply in their effort to perfect the materials and methods of construction for the new aqueduct for the city. Also editorial. 5000 w. Eng News—Sept. 26, 1907. No. 87250.

**The Equipment and Work of the U. S. Government Concrete Testing Laboratory at St. Louis, Mo.** Richard L. Humphrey. Information in regard to the tests being carried out. Ills. 1800 w. Engng-Con—Sept. 25, 1907. No. 87260.

**Results of a New Series of Tests on the Shearing Strength of Plain and Reinforced Concrete (Ergebnisse einiger neuen Versuche über den Scherwiderstand Reiner und Armierter Betonprismen).** J. E. Briki. Tests made on small square-section blocks with longitudinal reinforcement. Ills. 2000 w. Oest Wochenschr f d Oeffent Baudienst—Sept. 7, 1907. No. 87641 D.

**Concrete and Reinforced Concrete Construction from the Fire Protection View.** Report of the Committee on "Cement for Building Construction" of the Nat. Fire Protection Assn. 4000 w. Eng News—June 6, 1907. No. 84817.

See also same title, under CONSTRUCTION; and Adhesion and Reinforced Concrete, under MATERIALS OF CONSTRUCTION.

**Concrete Aggregates.**

Comparative Tests of Sandstone and

# CIVIL ENGINEERING

## Concrete Blocks

Slags as Concrete Aggregates. H. J. Kesner and F. W. Doolittle. Thesis. Discusses the relative merits of the different aggregates found in Denver, Colo., and vicinity. 1200 w. Min Rept—July 4, 1907. Serial. 1st part. No. 85435.

## Concrete Blocks.

The Concrete Block and Its Advance to the Position of a First-Class Building Material. Clarence M. Barber. A discussion of concrete blocks as a building material, their construction, and the advantages claimed. 2200 w. Jour Assn of Engng Socs—March, 1907. No. 83768 C.

## Concrete Columns.

Tests of Concrete and Reinforced Concrete Columns; Series of 1906. Arthur N. Talbot. An illustrated account of the materials, test pieces and methods of testing, with experimental data and discussion. 16000 w. Univ of Ills Bul—Feb. 1, 1907. No. 84589 N.

Concrete Column Tests. Arthur N. Talbot. Presented at meeting of the Am. Soc. for Test. Mat. Gives a summary of the results of tests made at the Univ. of Illinois. Ills. 3000 w. Cement Age—Sept., 1907. No. 87135.

Strength Tests of Hooped Concrete Columns. Abstract of results reported by Prof. A. N. Talbot to the American Society for Testing Materials. Ills. 2500 w. Eng News—Sept. 26, 1907. No. 87249.

## Concrete Mixing.

Some Representative Concrete Mixing Plants with Records of Operating Costs. F. W. Daggett. A description of plants, giving a summary of costs both of the installation and operation. Ills. 2000 w. Engng-Con—April 10, 1907. No. 83794.

## Corrosion.

The Corrosion of Reinforcing Metal in Cinder-Concrete Floors. Report of a committee appointed to investigate examples of serious corrosion of this material, found at San Francisco. 2800 w. Eng News—Nov. 1, 1906. No. 80181.

The Corrosion of Steel in Reinforced Cinder Concrete. William H. Fox. A report of experiments with a statement of conclusions. 1500 w. Eng News—May 23, 1907. No. 84859.

Electrolytic Corrosion of Iron and Steel in Concrete. A. A. Knudson. Gives results of laboratory experiments made to obtain data as to the amount of current and time necessary to cause corrosion upon metals incased in concrete or hydraulic cements, and to test their value as electrolytes. Ills. 3000 w. Pro Am

## MATERIALS OF CONSTRUCTION

## Hooped Concrete

Inst of Elec Engrs—Feb., 1907. No. 83044 D.

The Liability of Reinforced Concrete to Electrolytic Damage. Editorial on the paper of A. A. Knudson, before the Am. Inst. of Elec. Engrs. discussing the electrolytic damage that may affect metal imbedded in concrete. 1300 w. Eng News—March 21, 1907. No. 83203.

The Electrolytic Theory of the Corrosion of Iron. Dr. Allerton S. Cushman. Abstract of a paper read at meeting of Am. Soc. for Test. Mat. Reports experimental investigations. Ills. 5500 w. Ir Age—Aug. 8, 1907. No. 86117.

## Eucalyptus.

Eucalyptus as a Hardwood. O. M. Boyle, Jr. Information concerning this rapid growing timber and its value and uses. 3000 w. Cal Jour of Tech—Jan., 1907. No. 82051.

## Factor of Safety.

Working Stresses and Working Factor of Safety in Structures. From Prof. A. N. Talbot's résumé of Tests of Concrete and Reinforced-Concrete Columns. 1500 w. Eng News—July 11, 1907. No. 85573.

## Fireproofing.

Terra Cotta Fireproofing. A. S. Atkinson. On its wide application in building construction, giving statistics of fireproof construction in New York City. Ills. 2500 w. Ins Engng—Sept., 1907. No. 87224 C.

Standard Test for Fireproof Floor Construction. Reported by the committee on fireproofing materials of the Am. Soc. for Test. Materials. 600 w. Eng Rec—July 6, 1907. No. 85456.

## Forest Planting.

Some Cost Figures on Forest Planting for Railroad Purposes. E. A. Sterling. Gives some cost figures in regard to work done by the Pennsylvania Railroad. 900 w. Eng News—Aug. 29, 1907. No. 87157.

## Hard Woods.

The Hard-Woods of Western Australia. Information from two recent papers on the timbers of Australia, and recent tests made by G. A. Julius. Ills. 2500 w. Engr, Lond—March 22, 1907. No. 83426 A.

## Hooped Concrete.

Hooped Concrete and Its Applications (Le Béton freté et ses Applications). A. Considère. Discusses methods of circular reinforcement and compares this method with ordinary longitudinal reinforcement for columns, etc., giving results of tests of strength, elasticity, etc. Ills. Serial. 1st part. 2000 w. Génie Civil—Feb. 9, 1907. No. 82985 D.

## CIVIL ENGINEERING

### Hydraulic Cements

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### Plaster of Paris

#### Hydraulic Cements.

The Hardening Process in Hydraulic Cements (Ueber die Erhärtungsprozess der Hydraulischen Bindemittel). Dr. Rohland-Stuttgart. Treats the subject from the standpoint of physical chemistry. 2800 w. Stahl u Eisen—May 8, 1907. No. 84038 D.

#### Iron and Steel.

On the Resistance of Iron and Steel to Reversals of Direct Stress. Thomas Ernest Stanton, and Leonard Bairstow. Describes experiments undertaken to ascertain the relative resistance of certain kinds of iron and steel in common use among engineers when subject to reversals of stress. Also investigations of the changes in structure of materials. Ills. Discussion. 2 plates. 19700 w. Inst of Civ Engrs—No. 3630. No. 82043 N.

Three Tests of Iron Columns (Drei Versuche mit Eisensäulen). Fritz v. Emperger. Flexure tests of columns built up of angles and double T irons. Ills. 2500 w. Beton u Eisen—April, 1907. No. 84187 F.

#### Marbles.

I. Marbles: Their Ancient Application. Sir Lawrence Alma-Tadema. II. The Modern Aspect of Marble-Work in Architecture. William Brindley. Two papers, discussed together, and finely illustrated. 10000 w. Jour Roy Inst of Brit Archts.—Jan. 26, 1907. No. 82463 F.

The Two Carraras. W. G. FitzGerald. An illustrated article describing the great marble quarries of Italy and of Vermont, the methods of quarrying, loading, etc. 2200 w. Archt Rec—May, 1907. No. 83930 C.

#### Materials.

On the Study of Material. Editorial on the present day requirements of an intimate knowledge of materials used in engineering work. 2500 w. Eng News—Aug. 29, 1907. No. 86634.

#### Mortar.

The Composition and Strength of Mortar. W. J. Dibdin. Considers the relation of the composition to the resulting strength, giving facts of importance in tabular statements of experiments. Also general discussion. 11200 w. Jour Roy Inst of Brit Archts—Dec. 22, 1906. No. 81701 B.

Action of Sea Water on Mortar. Eug. Mayer. A report of trials made at La Rochelle and presented at the Brussels Congress of the International Assn. for Testing Materials. 1500 w. Cement Age—March, 1907. No. 83164.

Mortar and Concrete Mixtures. William Challoner. Discusses lime and cement mortars and the conditions under which the materials are available, the methods of improving the binding qualities, the advantages conferred by the use of trass, cost, etc. 2500 w. Engr, Lond—Sept. 6, 1907. No. 87085 A.

See also Adhesion, under MATERIALS OF CONSTRUCTION.

#### Ore Cement.

Cement for Sea-Water Construction. S. B. Newberry. Describes the properties of a new ore cement manufactured in Germany, which will not disintegrate in sea water. 800 w. Cement Age—Jan., 1907. No. 81798.

#### Paints.

A New Blue-Black Iron Paint as a Protective Covering. F. J. R. Carulla. Read before the Ir. & St. Inst., at Vienna. Describes an English patented process, utilizing "waste pickle" liquors. 800 w. Mech Engr, Lond—Sept. 28, 1907. No. 87510 A.

Priming Coats for Metal Surfaces: Linseed Oil vs. Paint. F. P. Cheesman. Slightly condensed from a paper read before the Am. Soc. for Test. Mat. Shows that linseed oil by itself is a bad thing. 1500 w. Eng News—Aug. 8, 1907. No. 86308.

#### Plaster of Paris.

The Périn System of Manufacturing Plaster (Procédé de Fabrication du Plâtre, Système L. Périn). A. Dumas. Illustrated description of Périn rotary furnace and other details, and general discussion of the manufacture of plaster from gypsum. 2500 w. Génie Civil—Dec. 1, 1906. No. 81135 D.

Manufacture of Plaster of Paris. C. O. Bartlett. Illustrates and describes methods and machinery used whereby gypsum deposits may be easily utilized. 1500 w. Eng & Min Jour—Dec. 8, 1906. No. 80886.

Process of Producing Bubbleless Plaster. Describes a process of mixing plaster with water so as to exclude all air. 1100 w. Sci Am Sup—May 11, 1907. No. 84331.

Slaking a Plaster and Means of Retarding Its Hardening. Gives hints from practice. 1500 w. Sci Am Sup—May 11, 1907. No. 84329.

Gypsum (Plaster of Paris) and Its Utilization. Trans. from Marco Pedrotti's "Der Gyps und Seine Verwendung." Gives early history of this material and the recent increase in the use. 2500 w. Sci Am



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## Reinforced Concrete

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## Reinforced Concrete

Sup—Feb. 23, 1907. Serial. 1st part. No. 82578.

Gypsum Plaster and Gypsum Products as Building Materials. Marco Pedrotti. Trans. from *Der Gips und Seine Verwendung*. Deals with the principal artificial building materials made from gypsum, and the methods of using. 2800 w. Sci Am Sup—July 13, 1907. No. 85519.

### Reinforced Concrete.

Tests of Shear and of the Bond of Steel in Reinforced Concrete. Prof. A. N. Talbot. Results of tests made at the University of Illinois, to determine the unit values of shear in concrete and the bond between steel and concrete. 3000 w. Eng News—Feb. 14, 1907. No. 82292.

Tests of Bond Between Concrete and Steel. T. L. Condron. Considers the factors upon which the adhesion depends, and gives results of a series of bond tests made to investigate the relative strength of bond developed by different forms of bars in the same kind of concrete and under otherwise identical conditions. Ills. 4000 w. Jour W Soc of Engrs—Feb., 1907. No. 83186 D.

The Slipping Resistance of Steel and Brass in Concrete. H. Burchartz. A report of adhesion tests made with steel and brass rods in concrete. 1200 w. Eng Rec—Aug. 3, 1907. No. 86087.

Tests of Cold-Twisted Steel Rods for Concrete Reinforcement. Jesse J. Shuman. Read before the Am. Soc. for Test. Mat. Information to aid in determining the quality and relative merits of concrete bars. 1200 w. Eng News—July 15, 1907. No. 85736.

Accurate Calculation of Compound Construction (Angenäherte und genaue Berechnung von Verbundkonstruktionen). P. Gödel. Mathematical treatment of strength of reinforced concrete. Diagrams. 2500 w. Oest Wochenschrift f d Öffentlichen Baudienst—Feb. 2, 1907. No. 82932 D.

A Theory of the Bending of Straight Reinforced-Concrete Girders (Essai d'une Théorie de la Flexion des Poutres Droites en Béton Armé). M. F. Chaudy. A mathematical discussion giving examples of application to different types of structures. Ill. 8000 w. Mem Soc Ing Civ de France—Feb., 1907. No. 83677 G.

Experiments on the Effects of Stress in Reinforced-Concrete Beams (Versuche über die Schubwirkungen bei Eisenbetonträgern). Emil Mörsch. Paper read before the Deutscher Beton-Vereins, describing the results of elaborate experiments to determine the way in which re-

inforced-concrete beams usually fail. Ills. 7000 w. Serial, 3 parts. Deutsche Bauzeitung—April 13, 20, May 1, 1907. No. 84138 each D.

Statistical Investigation of a Constantly-Recurring Problem in Reinforced-Concrete Construction (Statische Untersuchung einiger im Eisenbetonbau häufig Vorkommenden Aufgaben). Charles Abeles. Mathematical paper on the strength of reinforced-concrete beams. Serial. 1st part. 2000 w. Beton u Eisen—May, 1907. No. 84956 F.

Carrying Capacity of Reinforced-Concrete Floor Construction. A. E. Lindall and G. R. Heckle. Gives a record of a test on a full-sized panel. Ills. 2500 w. Eng Rec—July 20, 1907. No. 85793.

Concrete T-Beam and Column Tests at the University of Illinois. Gives a résumé of the work done and an abstract of the conclusions arrived at by Prof. Talbot. 5000 w. Eng News—July 11, 1907. No. 85572.

The Tensile Strength of Concrete in Reinforced-Concrete Beams Subjected to Bending (Beitrag zur Frage des Rechnerischen Nachweises der Betonzugspannung für auf Biegung Beanspruchte Tragwerke in Betoneisen). Fritz Postewanschnitz. Gives the results of tests on reinforced-concrete beams. 3000 w. Beton u Eisen—June, 1907. No. 85657 F.

Tests of Reinforced Concrete (Eine Eisenbetonstudie). M. G. Schinke and B. Löser. Gives methods and results of tests to determine the effect of transverse stresses on reinforced concrete. Ills. 1500 w. Serial. 1st part. Beton u Eisen—June, 1907. No. 85656 F.

An Experimental Study of Reinforced Concrete in Compression. Translation from *Beton und Eisen*, of an article by Messrs. Schinke and Loeser, describing experiments made on small prisms and columns with the object of studying the effect of lateral reinforcing on the compressive resistance of concrete. 2000 w. Cement—Aug., 1907. No. 86832 C.

Ferro-Concrete and Examples of Construction. J. S. E. De Vesian. Read before the British Assn. Refers to the ancient use of concrete and the present condition of the old material, and discusses the theory of ferro-concrete. 1700 w. Ir & Coal Trds Rev—Aug. 23, 1907. No. 86742 A.

Investigation of the Thermal Conductivity of Concrete and Embedded Steel and the Effect of Heat Upon Their Strength and Elastic Properties. Ira H. Woolson. Read before the Am. Soc. for Test. Mat. A record of experimental in-

# CIVIL ENGINEERING

## Reinforced Concrete

## MATERIALS OF CONSTRUCTION

## Slag Cement

vestigations. 2500 w. Eng News—Aug. 15, 1907. No. 86393.

Economic Design of Reinforced Concrete. F. W. Hanna. Discusses the effect of the variable cost of steel and concrete on the economic working stress of the steel and the corresponding percentage of reinforcement. 1200 w. Eng News.—Feb. 21, 1907. No. 82531.

The Influence of a Few Local Economical Considerations on the Design and Execution of Reinforced Concrete Work. Rudolph B. Hartman. An illustrated article considering structural features of reinforced concrete work, materials and methods, and information needed by an engineer using this material. 8000 w. Wis Engr—Feb., 1907. No. 82617 D.

Mechanics of Reinforced Concrete. Prof. W. K. Hatt. A discussion of this material and the mechanical principles underlying the construction. 1800 w. Cement age—Feb., 1907. No. 82495.

Reinforced Concrete. H. N. Allott. Read before the Manchester Assn. of Engrs. Considers the preparation and use of this material, the working stresses, etc. 2200 w. Prac Engr—March 1, 1907. Serial. 1st part. No. 82886 A.

Engineering Advice as to Reinforced Concrete. Report of the Committee on Architecture, Illinois Society of Engineers and Surveyors. 2000 w. Am Archt May 4, 1907. Special No. No. 84362 E.

Reinforced Concrete: Its Limitations. Carl Gayler. A discussion of this material, the effects of shrinkage, details of construction, etc. Ills. 5000 w. Jour of Engng Soc—April, 1907. No. 84527 C.

Reinforced-Concrete Structures for Manufacturing Purposes. Leonard C. Wason. An illustrated article presenting the advantages of this material and its economy. 2500 w. Engineering Magazine—June, 1907. No. 84195 B.

Heat Treatment of Reinforced Concrete. H. B. Macfarland. Gives details of tests made at the Chicago laboratory of the National Fire Proofing Company, to determine the fireproof value of reinforced-concrete columns. 1700 w. Engr, U S A—Nov. 1, 1906. No. 80202 C.

The Shearing and Crushing Resistance of Reinforced Concrete. (Die Scher- und Schubfestigkeit des Eisenbetons). Professor Mörsch. Theoretical treatment, diagrams and formulæ. 2100 w. Beton und Eisen—No., 1906. No. 81861 F.

See also Concrete and Reinforced Concrete, under CONSTRUCTION; Concrete and Hooped Concrete, under MATERIALS OF CONSTRUCTION; and Beams, under MEASUREMENT.

## Road-Making Stones.

Attrition Tests and Petrological Descriptions of British Road-Making Stones. Some valuable information from a book recently published in London, concerning the characteristics and availability of different broken stones of possible use for road-making. 1200 w. Eng News—Nov. 15, 1906. No. 80450.

## Roofing Tin.

Manufacture of Roofing Tin. Description and illustrations of the process, from the casting of the iron ingots to the rolling of the plates and their immersion in pots containing molten tin and lead. 2000 w. Ins Engng—March, 1907. No. 83589 C.

## Sand.

Standard Sand for Cement Work. Information from an account of investigations made by M. J. Reinhart, to ascertain the properties of the best sand and how ordinary sands can be improved. 1200 w. Eng Rec—July 20, 1907. No. 85789.

## Sand Blast.

Testing of Building Materials by the Sand-Blast Apparatus. H. Burcharts. Illustrates and describes the apparatus used and its effect. 1500 w. Engng—Nov. 30, 1906. No. 80925 A.

## Silt.

The Applicability to India of the Italian Method of Utilizing Silt. Sir Edward Charles Buck. Explains what India has done to utilize silt, and describes what Italy has done, suggesting further possibilities for India. 13500 w. Jour Soc of Arts—May 31, 1907. No. 84869 A.

## Slag Cement.

Recommendations for the Uniform Supply and Testing of Slag Cement (Bestimmungen für die Einheitliche Lieferung und Prüfung von Schlacken-Zement). Report of a Committee of the Austrian Society of Engineers and Architects, giving recommendations for standard sizes and weights of packages and tests. 3000 w. Zeitschr d Oest Ing u Arch Ver—May 24, 1907. No. 84974 D.

Tests of the Strength of Slag Cement (Versuche über die Festigkeit von Schlackenbeton). G. Kaufmann. Gives results of compression and shear tests, with applications to formulæ. Ills. 3000 w. Beton u Eisen—Sept., 1907. No. 87654 F.

Disposal of Slag from Smelting Works. Herbert Lang. Illustrates and describes the use of slag for the construction of a large breakwater at Santa Rosalia, Cal.

## CIVIL ENGINEERING

### Specifications

900 w. Eng & Min Jour—June 29, 1907. No. 85333.

### Specifications.

The Enforcement of Specifications. Dr. Charles B. Dudley. Presidential address before the Am. Soc. for Test. Materials. Discusses materials, testing, sampling, etc. 8000 w. Eng Rec—June 29, 1907. No. 85320.

### Stone.

The Strength of Stone as Affected by Different Methods of Quarrying. Francis W. Hoyt. Discusses the usual methods of testing and why the information is misleading, the effects of quarrying and dressing, etc. 3000 w. Eng News—Nov. 1, 1906. No. 80176.

### Structural Steel.

The New Structural Shapes of the Bethlehem Steel Co. Gives illustrated description of new shapes to be rolled, showing their range of application as compared with standard sections. 1800 w. Eng Rec—Dec. 22, 1906. No. 81229.

Stresses in Lattice Bars of Built Columns. Thomas H. Johnson. A study offered as a tentative suggestion, stating the assumptions. 1000 w. Eng News—Sept. 26, 1907. No. 87247.

Concerning Bridge Steel and Ship Steel. Editorial urging the unification of specifications for structural steel. 1000 w. Eng News—June 6, 1907. No. 84818.

See also Steel Buildings, under CONSTRUCTION; and Angles and Beams, under MATERIALS OF CONSTRUCTION.

### Tiles.

Ceramic Tiles and Their Use. C. Howard Walker. Gives information regarding the uses of tiles in construction, and designs of methods of obtaining variety in tile work for floors and walls. 2200 w. Br Build—July, 1907. No. 86144 D.

### Timber.

Steel versus Wood. A comparison of the prices of steel beams and Southern pine, showing that for heavy loads steel is the cheaper. 1100 w. Ir Age—Feb. 14, 1907. No. 82262.

Nomenclature and Specifications for Structural Timber. Gives the committee report presented to the Am. Soc. for Test. Materials. 1500 w. Eng Rec—June 29, 1907. No. 85325.

The Necessity of Economy in Railroad Uses of Wood. William L. Hall. Explains the present situation, showing the railroads to be large users of timber, and the shortage of the product. Suggests that other materials be substituted where-

### MATERIALS OF CONSTRUCTION

### Timber Preservation

ever they are known to be better, protecting the wood where used, and the care of forests. Discussion. Also a copy U. S. Dept. of Agriculture Circular 43, in regard to cross-ties. 9500 w. Pro Ry Club of Pittsburgh—Dec. 28, 1906. No. 83033 C.

The Results of Tests on the Strength of Timber Made at the Imperial Forestry Institution at Mariabrunn (Ueber die an der k. k. forstlichen Versuchsanstalt Mariabrunn gewonnenen Resultate der Holzfestigkeitsprüfungen). Gabriel Janka. The first part of the serial describes the results establishing a relation between specific gravity and compressive strength. Ill. 4000 w. Serial. 1st part. Zeitschr d Oest Ing u Arch Ver—Aug. 9, 1907. No. 86971 D.

See also Australian Woods, Eucalyptus, and Forest Planting, under MATERIALS OF CONSTRUCTION.

### Timber Preservation.

Maximum Length of Service for Poles, Ties and Timbers. Edward J. Weihe. Presents facts in regard to the structure, seasoning, and preservative treatment. 2800 w. St Ry Jour—Oct. 12, 1907. No. 87775.

Note on the Cost of Preserving Wooden Poles (Beitrag zur Frage der Konservierung hölzerner Leitungsmaste). E. F. Petritsch. Account of various preservatives now used in Europe. 2900 w. Elektrotechnik und Maschinenbau—March 10, 1907. No. 83638 D.

Seasoning of Telephone and Telegraph Poles. Henry Grinnell. From a circular of the U. S. Dept. of Agri. Describes experiments to prolong the service of timbers, particularly those which pertain to the rate of seasoning. 2000 w. Elec Rev, N Y—Aug. 17, 1907. No. 86425.

Causes of Decay in Timber. C. W. Berry. Discusses the causes and the use of live steam for treatment in timber preservation. 1500 w. Munic Engng—Aug., 1907. No. 86040 C.

The Preservation of Timber. Gives results, with regard to the penetration of heat into timber during the process of treatment, obtained during investigations carried out for the State Railways of France. 2000 w. Sci Am Sup—Aug. 3, 1907. No. 86068.

Specifications for Creosoting Oregon Fir Piling and Bridge Timber, A. T. & S. F. Ry. A copy of the specifications of this company. 3000 w. Py & Engng Rev—Sept. 21, 1907. No. 87173.

The Steaming of Timber. Octave Chanut. Read before the Nat. Assn. of Wood Preservers. Considers that the

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### Timber Preservation

condition of the wood determines whether it is advisable to steam or not. 1800 w. *Munic Engng*—Oct., 1907. No. 87394 C.

Results of Recent Work of the Timber Tests by the Forest Service, United States Department of Agriculture. W. Kendrick Hatt. 3000 w. *Am Ry Engng & Main of Way Assn*, Bul 85—March, 1907. No. 87887 N.

A New Injection Process of Timber Treatment (*Nouveau Procédé d'Injection des Bois*). M. F. Lantier. Describes methods and apparatus for treating timber by the Rüping creosoting process. Ills. 5000 w. *Rev Gen des Chemins de Fer*—Sept., 1907. No. 87602 G.

The Steaming of Timber before Treating with Preservative. I. The Evolution of the Steaming Process. Octave Chanute. II. Air-Seasoning vs. Steaming. David Allerton. Two papers read before the Wood Preservers' Assn. 2000 w. *Eng News*—Jan. 31, 1907. No. 82029.

The Line of Advance in Wood Preservation. Carl G. Crawford. Read at meeting of Wood Preservers' Assn. A review of what has been accomplished, and especially recent improvements in processes, and the future outlook. 3500 w. *Eng News*—Feb. 7, 1907. No. 82187.

Methods and Economic Aspects of Modern Timber Preservation. Gellert Alleman. Gives statistics of the amount of timber used in a year, and the per cent. treated; describes briefly the methods of treatment, the life and cost, discussing economic considerations, injury caused by treatment, etc. Discussion. Ills. 10500 w. *Pro Engrs' Club of Philadelphia*—April, 1907. No. 84525 D.

### MEASUREMENT

### Beams

Preservation of Mine Timber from Decay. John M. Nelson. Reviews experimental work conducted by the Philadelphia & Reading C. & I. Co., and U. S. Forest Service, showing how the life of timber may be prolonged. Ills. 1000 w. *Eng & Min Jour*—May 4, 1907. No. 84213.

The Powell Process of Preserving Wood with Saccharine. Illustrated description of this process which is simple, inexpensive and said to be efficient. 2200 w. *Sci Am Sup*—May 11, 1907. No. 84333.

The Preservation of Woods by the New Methods of Impregnation (*La Conservation des Bois par les Nouvelles Méthodes d'Imprégnation*). E. Lemaire. Discusses the causes of the decay of wood and the natural and artificial methods used to preserve it; describing principally the impregnation processes and the effects of the chemicals used in them. 5000 w. *Génie Civil*—April 13, 1907. No. 84113 D.

The Preservation of Railway Ties (*La Conservation des Traverses de Chemins de Fer*). A summary of the results of experiments on the heat-conducting qualities of wood with a view to determining the value of raising the wood to high temperatures before impregnation with preservative solutions. 3000 w. *Génie Civil*—April 27, 1907. No. 84118 D.

Some Problems in Wood Utilization in the United States. R. S. Kellogg. Considers the reduction of waste, economy in use, etc. Discussion. 3500 w. *Jour W Soc of Engrs*—Aug., 1907. No. 87137 D.

## MEASUREMENT

### Anemometer.

Electric Anemometer. R. Goldschmidt. Trans. from *Bul. de la Soc Belge d'Elec.* Illustrates and describes the apparatus. 1000 w. *Bul Int Ry Cong*—March, 1907. No. 83700 E.

### Azimuth.

A New Method for Determining Azimuth. E. H. McAlister. Explains a method which possesses advantages on the score of simplicity, in cases where only a moderate degree of precision is sought. It requires no knowledge of the time or latitude. 3500 w. *Eng News*—July 25, 1907. No. 85889.

### Backwater.

The Computation of Height of Back-

water Above Dams. D. M. Andrews. The methods employed by the writer are given. 1000 w. *Eng News*—Nov. 1, 1906. No. 80179.

### Beams.

Test of a Cast Steel Beam. J. V. McAdam. Describes the method of testing devised by the writer. 1500 w. *Eng News*—Aug. 1, 1907. No. 86077.

A Note on the Effect of the Time Element in Loading Reinforced Concrete Beams. W. K. Hatt. Read before the Am. Soc. for Test. Mat. Records general results of tests made. Ills. 1200 w. *Eng News*—Oct. 24, 1907. No. 87874.

Economical Proportions in I-Beam Sections. Robert H. Smith. A study of the

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## Bending Moments

economic proportions between web thickness and flange width, flange thickness and total depth, and variation of total depth throughout the span length. 3500 w. Engr, Lond—Nov. 9, 1906. No. 80499 A.

Test of a Reinforced Concrete Beam. Guy O. Fraser. A detailed account of the test representing actual working conditions. 2800 w. Cal Jour of Tech—Oct., 1907. No. 87981.

The Point of Economy in the Design of Reinforced-Concrete Beams. Editorial on the paper of F. W. Hanna, and letter by P. L. Reed, with curves and discussion with conclusions. 3500 w. Eng News—June 20, 1907. No. 85158.

Diagrams for Proportioning Reinforced Concrete Beams. Gives diagram drawn up by A. H. Perkins, with explanatory notes. 900 w. Eng News—April 25, 1907. No. 83908.

The Use of Tables and Diagrams for Proportioning Reinforced Concrete Members. Editorial warning in regard to the misuse of these aids for conditions to which they are not applicable. 1300 w. Eng News—April 25, 1907. No. 83910.

## Bending Moments.

Analytical Investigation of the Maximum Bending Moment in Steel Bridges (Investigaciones Analíticas sobre el Momento Máximo de Flexión en Puentes Ferroviarios). C. W. Ljungstedt. Mathematical paper with diagrams. Serial. 1st part. 3000 w. Ingenieria—April 15, 1907. No. 84928 D.

Moving Loads on Railway Under-Bridges. H. Bamford. Considers analytical versus graphical methods of determining the maximum bending moment and shear due to a train-load. 2500 w. Engng—May 31, 1907. No. 84890 A.

## Cantilevers.

Influence Lines for Suspended Cantilevers. Myron S. Falk. General deductions as to the determination of the static condition of such structures, and the application of influence lines to determine the maximum stresses. 3000 w. Sch of Mines Qr—April, 1907. No. 85020 D.

## Centre of Gravity.

Investigation of More General Formulae for Centres of Gravity and Moments of Inertia (Indicación de una Fórmula la más General para los C de G; para los M de I). J. Galí. Mathematical paper illustrated by diagrams. 7000 w. Revista Tech Ind—April, 1907. No. 84929 D.

## Chaining.

The Method and Apparatus for Chain-

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ing Used by the Topographical Bureau, Borough of Queens. George J. Falkinburg. Illustrated description of accurate chaining apparatus. 1500 w. Eng News—March 14, 1907. No. 83137.

## Columns.

Stresses in Simple Columns Under Eccentric Load. O. H. Basquin. A discussion of some of the simple problems on the theory of stresses in columns. 3300 w. Eng News—April 18, 1907. No. 83893.

## Deformations.

A Universal Instrument for Measuring Deformations of Materials. H. F. Moore. Illustrates and describes a self-indicating apparatus adapted to a large range of tests. 1200 w. Wis Engr—Feb., 1907. No. 82616 D.

## Earthwork.

Preliminary Earthwork Estimation with the Slide Rule. C. W. Crockett. An explanation of the method used, illustrating by example. 1500 w. Eng News—Nov. 15, 1906. No. 80448.

Earthwork Reception in Egypt. Describes methods of swindling in the measurement of earthwork, dealing with various classes of work. 2800 w. Engr, Lond—June 21, 1907. No. 85402 A.

## Extensometer.

An Extensometer for Recording Deformations in Bridge Members Under Impact Stress. Illustrated detailed description of an autographic instrument devised by F. E. Turneure. 1200 w. Eng News—June 20, 1907. No. 85155.

## Framework.

Resistance to Buckling of a Three-Armed Plane System (Knickfestigkeit eines Dreiarmligen Ebenen Systems). L. Vianello. Mathematical discussion of stresses and strains in a framework consisting of three straight members meeting at a point. Diagrams and table. 1000 w. Zeitschr d Ver Deutscher Ing—Oct. 27, 1906. No. 80606 D.

## Impact Test.

A New Impact Test. L. W. Page. Read before the Am. Soc. for Test. Materials. Illustrates and describes a machine for such tests. The main object being to determine the relative toughness of road-building rocks. 1500 w. Eng Rec—July 6, 1907. No. 85459.

## Leveling.

Precision Leveling in the Argentine Republic (La Nivelación de Precisión en la República Argentina). Arduino Lelli. Reviews the history of precision leveling and discusses the theory, errors, results

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## Longitude

obtained in Argentina, etc. Serial. 3 parts. 20000 w. Anal Sociedad Cien Argen—Sept., Oct., and Nov., 1906. No. 84931 each F.

A Tape Leveling Rod and Its Use. Arthur W. Tidd. Illustrated description of a sliding tape rod by means of which elevations are read off directly. 1200 w. Eng News—April 25, 1907. No. 83907.

Some Tests in Sighting at Leveling Rods and Stadia Rods. John C. Tracy. Presented at meeting of the Connecticut Soc. of Engrs. Gives the results of four tests made to determine the probable errors in setting a target on a leveling rod; reading a rod directly without using a target; measuring horizontal distances with the stadia; measuring differences in elevation by the stadia and vertical-angle method. 1800 w. Eng News—March 21, 1907. No. 83200.

## Longitude.

See same title, under ELECTRICAL ENGINEERING, COMMUNICATION.

## Plate Girders.

Distribution of Stresses in Plate-Girders. Cyril Walter Lloyd-Jones. Mathematical study of the relation between stress and strain in a flange-web connection as affecting the distribution of stress in a plate-girder. Appendices. 9000 w. Inst of Civ Engrs—No. 3637. No. 86372 N.

## Ratio.

Some Problems in Ratio. A. J. Dixon. How to apply the principles governing ratio to the solution of engineering problems. 1200 w. Engr, U S A—Nov 15, 1906. No. 80436 C.

## Roads.

The Viagraph. Illustrations, with brief description of a road-testing machine. It automatically traces every inequality over which it is drawn. 500 w. Sci Am Sup—March 2, 1907. No. 82648.

## Roof Trusses.

Calculation of a Two-Hinged Arched Roof Truss (Calcul d'une Ferme en Arc à deux Articulations). E. Aragon. Graphical solution of stresses due to dead and wind loads. Ill. Serial. 1st part. 3500 w. Génie Civil—March 23, 1907. No. 83694 D.

The Two-Hinged Arch with Tie Rod (Der Zweigelenbogen mit Zugband in Beliebiger Höhe). F. Bohny. An elaborate, mathematical analysis of the stresses in this type of truss. Ills. 10000 w. Serial. 1st part. Zeitschr d Ver Deutscher Ing—No. 84978 D.

## Resistance Moments.

Defective Resistance Moments (Fehler-

## MEASUREMENT

hafte Widerstandsmomente). F. Kliever. A discussion of the changes in the moments of resistance of beams of various sections caused by introducing thin plates. Formulae and diagrams. 500 w. Zeitschr d Oest Ing u Arch Ver—Oct. 19, 1906. No. 80621 D.

## Sounding.

Bathometer, Its Construction and Use. E. S. Wheeler. Illustrates and describes this sounding apparatus and its uses. 2000 w. Marine Rev—Nov. 15, 1906. No. 80428.

## Stream Discharge.

A Method of Estimating Stream Discharge from a Limited Number of Gagings. J. C. Stevens. Describes a method extensively used in the Columbia River District. 1000 w. Eng News—July 18, 1907. No. 85732.

## Strength of Materials.

The Work of Deformation as a Measure of the Strength of Materials (Ueber die Deformationsarbeit als Mass der Beanspruchung). Rudolf Girtler. A mathematical demonstration with concrete examples. Ills. 3500 w. Zeitschr d Oest Ing u Arch Ver—Sept. 13, 1907. No. 87646 D.

## Surveying.

The Ohio River Survey. Roger Baldwin Colton. Brief account of the work below Louisville, Ky., during the summers of 1905-6. Ills. 1800 w. Yale Sci M—March, 1907. No. 83159 C.

Methods and Results of the Wisconsin Water Power Survey. L. S. Smith. An account of the methods used and cost of this work. 2000 w. Wis Engr—April, 1907. No. 83858 D.

A Property Survey and Its Cost. Arthur W. Tidd. Describes method used on some 1,000 acres of country surveyed for the Croton Falls Reservoir, being built for the city of New York, giving cost. 3300 w. Eng News—Jan. 10, 1907. No. 81557.

Survey Work for a Two-Mile Viaduct, Key West Extension of the Florida East Coast Ry. George P. Carver. An illustrated description of methods employed in locating points and giving lines and grades for piling and concrete forms for nearly 200 piers. 2700 w. Eng News—May 9, 1907. No. 84291.

The Topographical Survey of Staten Island. Describes methods used in surveying this borough of New York City. 2500 w. Eng Rec—July 20, 1907. No. 85796.

Difficulties Encountered in Early Surveys of the State of Massachusetts; How

## Surveying

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### Surveying Tapes

They Were Overcome and the Results Obtained. Frank W. Hodgdon. 5000 w. Jour Assn of Engng Soc—May, 1907. No. 85143 C.

Photographic Surveying. William Griffith. An illustrated explanation of a method of making topographic surveys and maps of a region from a series of photographs. 1000 w. Mines and Min—June, 1907. No. 84739 C.

Methods of Surveying on New York State Roads. Information from a manual issued by Henry A. Van Alstyne concerning the methods used. 2500 w. Eng Rec—May 25, 1907. No. 84566.

Triangulation and Traverse Work in the Bronx, New York City. Notes from a paper by Edward H. Holden, read before the Munic. Engrs. of the City of New York, explaining some of the methods followed in the work. 2500 w. Eng Rec—Oct. 5, 1907. No. 87450.

City Surveying in Its Relation to Judicial Functions and Actual Practice. I. Judicial Functions of the City Surveyor. Lewis T. Haney. II. Practice of City Surveyors in the City of New York. Richard L. Williams. Discussion. 6200 w. No. 70. Pro Brooklyn Engrs' Club—1906. No. 85976 N.

See also Azimuth, Leveling, Telemeter, and Transit, under MEASUREMENT.

### Surveying Tapes.

Invar (Nickel-Steel) Tapes on the Measurement of Six Primary Base Lines. Owen B. French. Reports investigations made of the properties of invar tapes, with results of work and statement of advantages. 7700 w. Pro Am Soc of Civ Engrs—Oct., 1907. No. 87882 E.

### Telemeter.

Commandant Gérard's Telemeter. Illustrated description of an instrument for measuring distances from the observer to an object. 1500 w. Sci Am—Oct. 26, 1907. No. 87879.

### MUNICIPAL

#### Terrestrial Magnetism.

Recent Results of Terrestrial Magnetic Observations. L. A. Bauer. A review of general progress, with an outline of the work of magnetic survey of the United States and contiguous territory. 7000 w. Tech Qr—June, 1907. No. 85718 E.

#### Testing Materials.

Investigations of Structural Materials by the United States Geological Survey. Richard L. Humphrey. An illustrated account of the work at the testing laboratories at St. Louis. 2500 w. Cement—Sept., 1907. No. 87397 C.

Government Work in the Testing of Materials. Editorial discussion of how far the Federal Government may advantageously carry this work. 2000 w. Eng News—Oct. 17, 1907. No. 87742.

Compression Tests of the French Government Commission. Leon S. Moisseiff. Describes compression tests on longitudinally reinforced columns. Ills. 2500 w. Cement—Sept., 1907. No. 87396 C.

#### Transit.

The Verschoyle Pocket Transit. W. Denham Verschoyle. Illustrated description. 800 w. Eng & Min Jour—March 2, 1907. No. 82690.

#### Volumes.

Determining Volumes of Coal in Bins and Piles. Charles Enzian. Gives methods and formulæ for finding the dimensions of masses of different forms either intact or partly tapped. 1700 w. Eng & Min Jour—July 27, 1907. No. 85955.

#### Water Level.

A Pictorial Appeal;—Water-Works Too. H. F. Dunham. Showing simple methods of making an accurate automatic record of the elevation of water, uninfluenced by wave action, for determining the changes in level of the Great Lakes. 3800 w. Pro Am Water-Wks Assn—1906. No. 85803 N.

## MUNICIPAL

### Abattoirs.

The Sanitary Features of Markets and Abattoirs. William Paul Gerhard. A series of articles discussing briefly the buildings devoted to food supplies for large cities, especially their interior planning and construction, equipment, and sanitary arrangement. Ills. 1400 w. Am Archt—Dec. 15, 1906. Serial. 1st part. No. 81008.

### Asphalt.

Sheet Asphalt Specifications. Gives the latest specifications for Washington, D. C. 2000 w. Munic Jour & Engr—March 6, 1907. No. 82785 C.

### Asphalt Plants.

The Design and Construction of Two Asphalt Mixing Plants. Illustrates and describes plants at Cincinnati and at Pittsburgh, which have features of interest.

## CIVIL ENGINEERING

### Boulevard

From a paper by Charles Brossmann, Jr., before the Indiana Engng. Soc. 1600 w. Eng Rec—Feb. 9, 1907. No. 82224.

### Boulevard.

Progress of Construction on the Riverside Drive, New York. An illustrated article describing recent work on this great boulevard. 2000 w. Eng Rec—March 2, 1907. No. 82711.

### Bristol.

New Works at Bristol. Illustrates and describes the extensive improvements carried out by the Great Western Railway and by the Docks Committee of the Bristol Corporation, which have improved the communication between two parts of the city, enlarged the dock accommodation, and extended the railway facilities. 1800 w. Engr, Lond—Jan. 4, 1907. No. 81653 A.

### City Improvements.

Recent Reports on City Plans. Charles Mulford Robinson. Outlines of proposed improvements in St. Paul, St. Louis, Boston and New York. Recommendations for parks, parkways, wider thoroughfares, bridge approaches, etc. Ills. 3000 w. Munic Jour & Engr—April 3, 1907. No. 83437 C.

City Planning and Replanning. Editorial discussion of points deserving attention. 2000 w. Eng News—Oct. 31, 1907. No. 87991.

### Earth Settlement.

Earth Settlement in City Streets. Horace Andrews. From a paper before the Am. Soc. of Munic. Imp. Gives a summary of the best practice in dealing with the shrinkage and expansion of soils in different climates, and related matters. 4500 w. Munic Engng—Nov., 1906. No. 80217 C.

### Fire Apparatus.

Fire Prevention Apparatus. John Richards. Suggests a fire boat or barge provided with units of rotative pumping apparatus, and other features. With special reference to San Francisco and its needs. Discussion. 3500 w. Jour Assn of Engng Soc—April, 1907. No. 84528 C.

### Fire Protection.

Fires in Cotton-Mills; Their Prevention and Extinction. The causes of fires are considered and suggestions for fire fighting. Ills. 2000 w. Engng—May 31, 1907. No. 84891 A.

### Garbage Disposal.

Specifications for Refuse Destructor, Borough of Richmond, New York City. Gives the most important portions of

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specifications on the lines of recent British practice, for a refuse destructor designed to produce heat for lighting or power purposes. Plans. 2500 w. Eng News—Dec. 6, 1906. No. 80846.

English, German, and Swiss Destructor Plants. Frank C. Perkins. An illustrated article describing these plants and the use made of the power. 2500 w. Munic Engng—June, 1907. No. 85177 C.

Disposal of House Refuse. Illustration and description of the "Lightning" refuse disintegrator, its operation and cost of treatment. 800 w. Engng—June 7, 1907. No. 85117 A.

An 18-Ton Garbage Crematory. Illustrated description of a crematory at Port Ontario, N. Y., designed to destroy 18 tons of the house wastes in 24 hours. 800 w. Eng Rec—April 13, 1907. No. 83707.

Two Years' Operations of the Municipal Garbage Reduction Works, Cleveland, O. Gives figures on the cost of garbage collection and disposal. 4000 w. Eng News—May 2, 1907. No. 84044.

Electricity and Destructor Works. A. J. Abraham. Remarks on the success of combined plants for small towns, and their failure usually for towns of 40,000 or more inhabitants. 2000 w. Elec Rev, Lond—Feb. 1, 1907. No. 82246 A.

The Importance of Garbage Burning from an Electrical Point of View (Die Bedeutung der Müllverbrennung für die Elektrotechnik). G. Dettmar. A discussion of the possibility of developing electric power from the burning of city refuse, the first part discussing the average composition of garbage. 2500 w. Serial. 1st part. Elektrotech Zeitschr—June 27, 1907. No. 85688 D.

### Gary, Ind.

The Municipal Works of Gary, Ind. Describes the extensive municipal improvements and public service system at this city which is being built in connection with the new plant of the United States Steel Corporation. Ills. 5700 w. Eng Rec—July 20, 1907. No. 85788.

### Gravel Plants.

Gravel Screening and Washing Plants. Brief illustrated descriptions of plants in different localities. 2000 w. Eng News—Aug. 1, 1907. No. 86071.

### Harbor Pollution.

The Pollution of New York Harbor. George C. Whipple. Map and explanation of present conditions, with a study of important phases of sewage disposal at New York. 5400 w. Eng News—May 23, 1907. No. 84499.



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## Hygiene

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## Pavements

### Hygiene.

Second International Congress on Hygiene at Geneva, 1906 (*Der II Internationale Kongress für Wohnungshygiene in Genf 1906*). A. G. Stradal. Abstract of papers read at the convention. Tables. Serial. 2 parts. 7200 w. *Zeitschr d Oesterr Ing und Arch Vereins*—Feb. 1 and Feb. 8, 1907. No. 83615 each D.

### Kyoto, Japan.

Municipal Engineering Works of Kyoto, Japan. S. Tanabe. Brief account of a new aqueduct and hydro-electric power plant; the Kyoto water supply; and city tramway. Ills. 500 w. *Eng News*—July 4, 1907. No. 85471.

### Manila.

The New Water and Sewerage Systems of Manila. Illustrates and describes interesting work under construction in the Philippines, including a rubble concrete masonry dam creating a reservoir with a capacity of about 2,000,000,000 gals., and a combination gravity and pumping sewerage system. 2500 w. *Eng Rec*—Sept. 14, 1907. No. 87027.

### New Orleans.

Sanitary Conditions in New Orleans. George G. Earl. Read before the Am. Soc. of Munic. Imp. Briefly outlines the history of this city and conditions affecting the health and needed sanitary improvements, describing work already accomplished and in progress. 2500 w. *Munic Engng*—Nov., 1906. No. 80215 C.

### Pavements.

Sheet Asphalt Pavements. H. C. Innes. Information relating to the selecting of materials, laying, etc. 3000 w. *Munic Engng*—March, 1907. No. 82695 C.

The Maintenance of Asphalt Pavements. S. Whinery. Discusses the most economical method of keeping asphalt pavement in repair. 5000 w. *Eng News*—May 9, 1907. No. 84294.

Recent Progress in the Asphalt Paving Industry. Abstract of a recent paper by Clifford Richardson, reviewing the development of sheet asphalt paving, and discussing the principles upon which good construction is based, the materials, and recent improvements. 5700 w. *Eng Rec*—June 1, 1907. No. 84701.

Recent Progress in the Asphalt Paving Industry. Clifford Richardson. Read before the N. Y. Sec. of the Soc. of Chem. Ind. Briefly describes this industry in its early periods, and reviews the advances recently made. 3000 w. *Engng-Con*—June 26, 1907. Serial. 1st part. No. 85337.

The Asphalt Pavement on the Thames Embankment. Illustrates and describes interesting sheet asphalt work laid on top of the old macadam pavement. 700 w. *Eng Rec*—Aug. 24, 1907. No. 86558.

Brick Pavements. Presents some of the advantages of brick pavements and gives illustrations of streets in various cities. 1300 w. *Munic Engng*—June, 1907. No. 85178 C.

Cement Filler for Brick Pavements. Requirements and explanations taken from the specifications for laying vitrified brick pavements, approved by the National Brick Manufacturers' Assn. 2500 w. *Munic Engng*—Aug., 1907. No. 86039 C.

Brick Pavements in Paris, Ill. Statistics from specifications, with comments and remarks on the construction. 4000 w. *Munic Engng*—Sept., 1907. No. 87133 C.

Tests of Other Woods Than Yellow Pine for Pavements. F. A. Kummer. Gives information concerning tests made and results obtained with various woods in determining their value for paving purposes. 3500 w. *Munic Engng*—Nov., 1906. No. 80219 C.

The Development of Wood Block Pavements in the United States. Frederic Arnold Kummer. A review of the development, explaining methods of laying, and some of the lines of progress. Ills. General discussion. 5000 w. *Jour Assn of Engng Socs*—Nov., 1906. No. 81387 C.

Bituminous Pavements Containing Crushed Stone. J. W. Howard. Considers bituminous pavements for cities and their construction. 2800 w. *Munic Engng*—Nov., 1906. No. 80218 C.

Granite-Top Macadam Paving in Oak Park, Ill. R. A. Carpenter. Abstract of a paper read before the Ill. Soc. of Engrs. & Survs. Reports the use of this pavement, calling attention to points to be observed in its construction in order to obtain the best results. 900 w. *Eng News*—Feb. 14, 1907. No. 82291.

The Method, Cost and Results of Tarring Heavily-Traveled Macadam Streets in Chicago. Explains the greater wear on streets due to the extensive use of automobiles, and gives particulars relating to tarring, the results being considered sufficiently satisfactory to justify a continuance of the work. A statement of cost is given. 2200 w. *Eng Rec*—March 16, 1907. No. 83071.

Macadam Streets, Surfaced with California Liquid Asphalt, as Constructed in the City of Redlands, Cal. C. C. Brown. Describes methods found satisfactory on

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### Pavements

streets with steep slopes. Ills. 1000 w. Eng News—April 4, 1907. No. 83445.

Tar Macadam Pavement in Duluth, Minn. E. K. Coe. A description of the methods used, and report of the satisfactory results. 2800 w. Eng News—May 30, 1907. No. 84697.

Notes on Tar Macadam. C. F. Wike. Abstracts of remarks offered for discussion at Liverpool, Eng. Does not consider it desirable for steep gradients. Gives specifications, cost, etc. 1000 w. Eng News—Aug. 8, 1907. No. 86311.

Oiled Roads in California. Notes from the biennial report of N. E. Ellery, State highway commissioner, giving extracts from the specifications for the construction of oiled graveled streets. 2000 w. Eng Rec—March 23, 1907. No. 83215.

Hassam Pavement. W. A. Luey. Describes this new concrete pavement, named for the inventor, and the manner of laying. 1200 w. Cal Jour of Tech—March, 1907. No. 83180.

Modern Methods in Cement Paving. H. L. Weber. Read before the Assn. of Am. Cement Mfrs. Gives details and cost data in the construction of streets and sidewalks with concrete foundations. Specifications and letters are given. 5000 w. Cement Age—May, 1907. No. 84553.

Cement Sidewalk Paving. Albert Moyer. Suggestions for the work in order to secure permanency, durability and neatness. Also specifications. 4800 w. Cement—Jan., 1907. No. 82278 C.

Pavements. An informal discussion of whether the paving materials of the present will be used in the construction of the pavements of the future. 4000 w. Pro Am Soc of Civ Engrs—Aug., 1907. No. 86645 E.

Pavements. Continued discussion of whether paving materials of the present will be used in the future. 7000 w. Pro Am Soc of Civ Engrs—Sept., 1907. No. 87716 E.

Notes on Foreign Pavements. Notes from a report by B. T. Fendall, on a personal visit to England and the Continent for the purpose of examining the paving methods and results attained. 3500 w. Eng Rec—Jan. 19, 1907. No. 81724.

Experience with Various Pavements on Streets with Heavy Grades. C. G. Anderson. Abstract of a paper read before the Ill. Soc. of Engrs. & Survs. Cross-sections and descriptions of styles of paving employed on streets with heavy grades, at Moline, Ill. 3500 w. Eng News—March 14, 1907. No. 83134.

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The Cost of Materials and Wages of Labor for Paving Work in Representative American Cities. Tabulated statements of costs for various kinds of pavement, with remarks. 1000 w. Engng-Con—March, 1907. No. 83276.

The Development of Street Pavements. George W. Tillson. A study of the causes that led to the use of the different materials and the changes adopted. Ills. 5000 w. Jour Fr Inst—June, 1907. No. 85138 D.

How to Compute the Cross-Section of a Curved Street Paving. Analysis and practical application of method. 500 w. Engng-Con—June 12, 1907. No. 85034.

Paving Specifications and Inspection. Francis P. Smith. Remarks on the faults of old methods, and the new methods made possible by additional knowledge. 2200 w. Munic Jour & Engr—Aug. 7, 1907. No. 86129 C.

On Better Systems of Pavements for Streets and Roads from the Point of View of Efficiency and Economical Maintenance (Sui Migliori Sistemi di Pavimentazione delle Strade Comunali e Provinciali dal Punto di Vista della loro Efficiacia e della piu Economica Manutenzione). Nicolo Valente. 4000 w. Rivista Gen d Ferrovie—Aug. 11, 1907. No. 86904 D.

See also Asphalt, Asphalt Plants, Earth Settlement, Gravel Plants, Roads, and Stone Crushing, under MUNICIPAL.

### Pipe Subways.

Pipe Subways in British Cities and in Paris. Illustrates and describes subways in a number of foreign cities, giving information regarding cost and other matters of interest. 7500 w. Eng News—March 14, 1907. No. 83132.

### Public Health.

Public Health and the Future of Paris (Santé Publique et Paris de Demain). Gaston Trélat. Paper read at the convention of the National Academy of Arts and Crafts. Discusses the sources of danger to public health and the problems which confront Paris. Ill. 8000 w. Rev Gen des Sci—April 15, 1907. No. 84109 G.

The Spreading of Diseases by Insects and Their Extermination (Die Uebertragung von Krankheiten durch Insekten und ihre Bekämpfung). Claus Schilling. 3000 w. Gesundheits-Ing—May 11, 1907. No. 84969 D.

### River Purification.

River Flushing Plants at Milwaukee, Wis. Describes a system of low-level intercepting sewers, and also flushing plants

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## Roads

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## Roads

for purifying fouled rivers. Ills. 2000 w. Eng News—Aug. 1, 1907. No. 86072

### Roads.

The Use of Tar on Roads. James Owen. From a paper before the Am. Soc. of Munic. Imp. Gives a brief outline of what has been attempted in Europe and America in the application of tar and crude oil to the surface of roads to prevent dust. 2000 w. Munic Engng—Nov., 1906. No. 80216 C.

Methods of Constructing and Repairing Oiled Roads in California. From the report of N. Ellery, State Highway Commissioner. Gives the plan followed on a good oiled earth highway. 2000 w. Engng-Con—April 24, 1907. No. 83921.

Methods and Cost of Reducing Dust and Hardening Roads by Surface Applications. J. W. Howard. Discusses the treatment of earth, sand, gravel, and macadam roads by surface applications. 5500 w. Engng-Con—April 3, 1907. No. 83473.

The Soil of Our Roads and Streets (Le Sol de nos Routes et de nos Rues). G. Espitalier. An account of experiences in France in hardening and reducing dust on roads by surface applications, illustrating and describing methods and machines employed. 5500 w. Bull Soc d'Encour—May, 1907. No. 85609 G.

The Asphaltic-Oiled and Tamper-Rolled Compressed Dirt Roads of Santa Monica, Cal. Gives specifications for the constructing of oiled dirt roads. Ill. 1300 w. Eng News—April 4, 1907. No. 83446.

Petrolithic Pavement: A New Method of Oiled Road Construction. Illustrated description of this new type of road and the machine with which it is constructed. 1200 w. Engng-Con—April 17, 1907. No. 83795.

Methods and Cost of Tarring Macadam and Clay Roads in South Haven, Mich. Charles R. Wrightman. Describes methods and gives suggestions based on experience. 1500 w. Engng-Con—May 8, 1907. No. 84273.

Tar-Spreading Tests. Reports a series of tests of machines designed for this work to determine their efficiency and cost of operation. Ills. 3000 w. Engr, Lond—May 4, 1907. No. 84761 A.

The Dust Prevention Competition. A report of the practical tests in England of roads treated by tar-spraying machines, and of the competing machines. Ills. 2500 w. Autocar—June 1, 1907. No. 84873 A.

The Application of Tar to Macadamized Roads. Thomas Aitken. Extract from a paper read in Scotland. Describes

an apparatus for spraying tar, either in a hot or cold state, and its operation, with information in regard to the work. 1500 w. Eng News—Aug. 22, 1907. No. 86513.

Mixing Rocks for the Wearing Surface of Macadam Roads. Notes from a report of the U. S. Office of Public Roads relating to the phenomena attending the decomposition of feldspars. 1800 w. Eng Rec—Feb. 23, 1907. No. 82525.

Methods and Cost of Constructing and Maintaining Oyster-Shell Roads. Josiah Miller. Information relating to the construction and maintenance of shell roads and the cost. 2200 w. Engng-Con—May 1, 1907. No. 84070.

The Construction of Macadam Roads. Austin B. Fletcher. A brief description and discussion of the processes and essential features. Also data as to costs. Ills. 18000 w. U S Dept of Agri—Bul. 29. No. 87867 N.

Methods and Cost of Building Macadam Roads in the State of Washington. From a paper by A. L. Valentine, read recently before the Pacific N.-W. Soc. of Civ. Engrs. 2000 w. Engng-Con—Oct. 2, 1907. No. 87408.

The Construction of Sand-Clay and Burnt-Clay Roads. From a report by W. L. Spoon on some experimental roads constructed of these materials. 2000 w. Eng Rec—Nov. 17, 1906. No. 80511.

The Construction of Sand-Clay and Burnt-Clay Roads. From a discussion by William L. Spoon, on the construction of such roads. 1400 w. Eng News—Nov. 1, 1906. No. 80183.

General Method of Preparing Plans and Estimates for New York State Highways. Information from a pamphlet issued by the State Engineer. 3300 w. Eng Rec—June 22, 1907. No. 85206.

The Supervision of Construction of the New York State Highways. Gives the methods of procedure as described by the State Engineering Department. 3500 w. Eng Rec—July 13, 1907. No. 85546.

I. A Plea for Better Country Roads. George Robert Jebb. No. 3624. II. Country Roads for Modern Traffic. John Eaton Blackwall. No. 3604. Two papers discussed together. Ills. 33000 w. Inst of Civ Engrs—Feb. 20, 1906. No. 80545 N.

The Construction of Low-Cost Country Roads. Reviews information given by W. W. Crosby, chief engineer of the highway division of the Maryland Geological survey, concerning the cost of road construction, and the materials used. 2500 w. Eng Rec—Nov. 10, 1906. No. 80325.

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## Roads.

The Benguet Road, Luzon, P. I. Brief account of difficult road construction in the Philippine Islands. 1400 w. Eng Rec—March 23, 1907. No. 83220.

Road Construction and Maintenance in Johannesburg. G. S. Burt Andrews. Explains the local conditions, the material available, and the work that has been done. General discussion. 9800 w. Jour S African Assn of Engrs—Feb., 1907. No. 83545 F.

Road Intersections Along the Grand Boulevard and Concourse, New York City. Describes the transverse roads under construction at Tremont Ave. and Kingsbridge Road as typical of all that are to be built. Ills. 1600 w. Eng Rec—Aug. 31, 1907. No. 86693.

Some Notes on Tractive Force on Roads. Discusses results of experimental tests. 2500 w. Prac Engr—May 10, 1907. No. 84436 A.

See also Road Making Stones, under Materials of Construction, and Pavements, under MUNICIPAL.

## Road Traffic.

The Illinois Road Traffic Census. A. N. Johnson. Abstract of a paper read before the Ill. Soc. of Engrs. & Survs. Gives results of a systematic effort to obtain information in regard to traffic conditions and their effect on the roads, etc. 1800 w. Eng Rec—March 16, 1907. No. 83070.

## Rochester, N. Y.

The Public Works of Rochester, N. Y. Illustrates and describes the new Cobb's Hill reservoir, and the efficient street-lighting system. 2000 w. Munic Engrg—April, 1907. No. 83595 C.

## Sanitary Code.

The Revised Sanitary Code of the Town of Montclair, N. J. A reprint of this code for a suburb of New York City having a population of about 17,000. Also editorial. 14500 w. Eng News—Aug. 22, 1907. No. 86509.

## Sanitation.

The Work of the Sanitary District of Chicago; That Already Accomplished and Yet Contemplated Below the Controlling Works at Lockport. Isham Randolph. Ills. Discussion. 5000 w. Jour W Soc of Engrs—Aug., 1907. No. 87141 D.

## Sewage Disposal.

Residential Septic Tanks. Burton T. Ashley. From a paper entitled "Sewage Disposal Without Sewers," read at Cleveland, O. Describes arrangements that proved most successful, and the later invention of a nitrification duct, explaining

its use. 1400 w. Eng News—Jan. 31, 1907. No. 82020.

Decision in the Cameron Septic Tank Suit Against Saratoga Springs, N. Y. Gives the decision of Judge Ray, in this suit in equity to restrain alleged infringement and for an accounting. Reviews the claims of the Cameron patent and of many phases of earlier sewage treatment. 12000 w. Eng News—March 28, 1907. No. 83322.

The Explosion of the Saratoga Septic Tank. Prof. W. P. Mason. An account of the accident with discussion of the cause. Also general discussion. Ill. 4000 w. Jour N Eng W-Wks Assn—March, 1907. No. 83337 F.

The Septic Tank of the Belleville, Ill., Sewerage System. Plan and sections with description of a tank with a capacity for treating the normal dry weather flow from a system serving a population of 30,000. 1600 w. Eng Rec—April 13, 1907. No. 83710.

Recent Septic Tanks. Illustrated descriptions of reinforced-concrete plants at Newton, N. J., and at Belleville. Ills. 1000 w. Munic Jour & Engr—May 1, 1907. No. 84034 C.

On the Question of the Importance of Septic Tanks for Biological Water Purification (Zur Frage von der Bedeutung des Septiktanks für die biologische Abwasserreinigung). Dr. S. K. Dzierzgow-sky. The first part of the serial gives several tables of elaborate records of the action of septic tanks in water purification made from tests at Tsarskoje Sselo. Ills. 16500 w. Serial. 1st part. Gesundheits Ing.—April 27, 1907. No. 84185 D.

Notes on the Septic Tank Process of Sewage Purification. W. R. Butler. A discussion of this process with notes on the history of its development. 5000 w. Can Soc of Civ Engrs—Adv. Proof, Nov., 1906. No. 80205 D.

Septic Tanks at Birmingham. An illustrated description of the county sewerage system serving this city of Alabama and the surrounding territory, giving cost and other data. 2000 w. Munic Jour & Engr—Dec. 5, 1906. No. 80868 C.

Fungus Growth on Experimental Percolating Sewage Filters at Waterbury, Conn. Leo F. Rettger. Describes briefly the experimental plant, and the growth that appeared, its character and the methods tried for its removal. 1200 w. Eng News—Nov. 1, 1906. No. 80182.

Experiments in Distribution of Sewage Over Sprinkling Filters at Waterbury, Conn. William Gavin Taylor. An ac-

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### Sewage Disposal

count of tests made, and illustrated description of distributors with fixed sprinkler heads tested. 2500 w. Eng Rec—Jan. 5, 1907. No. 81490.

The Sterilization of Sewage-Filter Effluents. Earl B. Phelps and William T. Carpenter. Discusses desirability, the efficiency and cost, outlining a process of using gaseous chloride. 5500 w. Tech Qr—Dec., 1906. No. 81776 E.

The Comparative Disposition of Organic Matter by Sand, Contact and Sprinkling Filters. H. W. Clark. Abstract of a paper read before the Am. Pub. Health Assn., City of Mexico. A study of the organic matter in suspension in sewage. 4500 w. Eng News—June 6, 1907. No. 84813.

The Maintenance of Intermittent Sewage Filters in Winter. Extracts from an interesting discussion at the meeting of the Sanitary Section of the Boston Soc. of Civ. Engrs., on Dec. 5, 1906. 1200 w. Eng News—Dec. 13, 1906. No. 80971.

The Maintenance of Sewage Filters in Winter. George E. Bolling. Gives experience with furrowed beds in winter at Brockton, and other information relating to the working of these filter-beds. General discussion. 7500 w. Jour Assn of Engng Socs—Jan., 1907. No. 82498 C.

Eight Years' Work with Trickling Sewage Filters at the Lawrence Experiment Station. H. W. Clark. A review of the studies made of such filters at the station named and the results. 5000 w. Eng News—April 11, 1907. No. 83566.

New Electrically-Driven Sewage Pumping Plant at Salem, Mass. Illustrated description of interesting features in the new system for disposing of the sewage. 2000 Eng Rec—Feb. 23, 1907. No. 82527.

Sewerage Pumps and Lifts. Illustrates and describes centrifugal pumps, ejectors, and lifts. 3300 w. Munic Jour & Engr—May 1, 1907. No. 84033 C.

New Sewage Pumping Station at Chicago. Athburn W. Meltrose. Illustrated description of the installation of the Thirty-ninth Street pumping station, on the South Side, which will soon be in operation. 3500 w. Power—Aug., 1907. No. 86032 C.

The Efficiency of the Shone System of Pumping. Charles Leslie Cox. Gives data concerning the actual working of this system, with results of tests, carried out on the sewage-pumping plant of the Gosport and Alverstoke Urban District Council. 2200 w. Inst of Civ Engrs—No. 3659. No. 86375 N.

The Baltimore Sewage Testing Station.

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Illustrates and describes the experimental station under construction. It comprises a septic tank, sprinkling filters, and a laboratory. 1500 w. Eng Rec—Nov. 17, 1906. No. 80509.

The Experimental Sewage Treatment Works for Baltimore, Md. Illustrated detailed description of an experimental plant being installed to gain information for use in designing proposed sewage works for the city. 1200 w. Eng News—Feb. 28, 1907. No. 82673.

Report on the Treatment of Part of the Sewage of Chicago and Its Relation to the Chicago Drainage Canal. Gives extracts from a report by Messrs. Rudolph Hering and George W. Fuller in regard to the sewage disposal for the Calumet area and the water supply of Chicago. 3500 w. Eng News—Jan. 31, 1907. No. 82025.

Chicago's Thirty-ninth Street Sewage Pumping Station. Illustrated detailed description of a station with capacity for handling 1,500,000 gallons a minute. 4500 w. Engr, U S A—Aug. 1, 1907. No. 86130 C.

A Favorable Report on the Calumet Drainage Canal. Gives the projects under discussion in connection with the sewage disposal of this district of Chicago, and the opinion of Mr. Rudolph Hering. 2500 w. Eng Rec—Oct. 26, 1907. No. 87937.

The Admission of Trade Wastes into Sewers of Reading, Pa. An account of an investigation made and the conclusions reached, describing the character of the wastes and giving the classification made. 2200 w. Eng Rec—May 25, 1907. No. 84564.

Report on the Disposal of Trade Wastes of Reading, Pa. A report of investigations made, giving the conclusions and recommendations. 1200 w. Eng News—Aug. 22, 1907. No. 86512.

The Sewage Purification Plant at Reading, Pennsylvania. Illustrated detailed description of a new installation consisting of a sewage screening device, a septic tank, a sprinkling filter, and a final settling basin. 5000 w. Eng Rec—Oct. 5, 1907. No. 87441.

Hanley Sewage Works. Gives an outline of recently completed works said to be the most perfect sewage scheme ever put in operation. 1500 w. Engr, Lond—May 31, 1907. No. 85001 A.

Electricity in the Hanley Sewage Works. The method of driving the sewage distributors is illustrated and described, and the lighting of the works.

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2200 w. Elec Engr, Lond—June 21, 1907. No. 85380 A.

Hydraulic Sewage Ejector on Lake Ave. South, Duluth, Minn. E. A. Wilson. Illustrates and describes an apparatus for elevating the sewage from a low district, explaining the conditions it was designed to meet. 1300 w. Eng Rec—March 9, 1907. No. 82865.

Regulations for Sewage and Roof Water Disposal on Unsewered Premises, Havana, Cuba. Gives some interesting regulations providing for the construction of miniature septic tanks and of absorbing basins for rain water, pending the completion of a new sewerage system at Havana. 1000 w. Eng News—March 14, 1907. No. 83136.

The Municipal Sewage Experiment Station, of Waterbury, Conn. William Gavin Taylor. Describes the local conditions which must be met, and gives an illustrated description of an experiment station and testing work being carried out. 4500 w. Eng News—Feb. 28, 1907. No. 82674.

The Sewage Disposal Works at Kirksville, Mo. Plan and description of a system carrying domestic sewage only. The disposal works consist of septic tanks, contact beds, and intermittent sand filters, and one bed is sterilized by a solution of copper sulphate before being discharged. 1800 w. Eng Rec—March 23, 1907. No. 83222.

The Sewage Disposal Plant of the Soldiers' Home, Johnson City, Tenn. Describes a plant comprising a septic tank, four contact beds, and four sand filters, designed to operate under a wide variation of flow. 2000 w. Eng Rec—April 27, 1907. No. 83946.

A Description of the Recently Installed Sewage Disposal Works for the Village of Ballston Spa, New York. G. L. Robinson. Detailed description with illustrations and explanation of the character of the sewage. 2800 w. Pro Am Soc of Civ Engrs—May, 1907. No. 84561 E.

Sewage Experiments at Matunga, Bombay. Gilbert J. Fowler. Describes work of the sewage experiment station at the Leper Colony, a septic tank installation. The marked septic activity and small sludge residue, under a uniformly high temperature, and the large volume of gas produced are of interest. Ills. 1800 w. Eng News—Aug. 8, 1907. No. 86312.

Sewage Problem of Western Pennsylvania. I. Introductory. Morris Knowles. II. Administration of Pennsylvania Laws Respecting Stream Pollution. F. Herbert

Snow. III. Present Condition of Municipal Sewers of Pittsburgh. I. Charles Palmer. Three papers discussed together. 16000 w. 'Pro Engrs' Soc of W Penn—July, 1907. No. 86396 D.

Work at the Madeleine Sewage Experiment Station, Pasteur Institute of Lille, France. Earle B. Phelps. Information based on two French reports, describing the plant and its operation. 1300 w. Eng News—Aug. 15, 1907. No. 86391.

Comparative Résumé of the Sewage Purification Tests at Columbus, Ohio. George W. Fuller. With discussion. 24700 w. Jour Assn of Engng Socs—Aug., 1907. No. 87225 C.

An Experience with Clogged Sewage Beds at Pawtucket, R. I. Notes from a bulletin issued by the State Board of Health of Rhode Island in regard to investigations at Pawtucket. 2000 w. Eng Rec—March 30, 1907. No. 83369.

The Sewage Disposal Problem of Metropolitan New York and New Jersey. Editorial on proper disposal of sewage in this thickly settled district, describing the conditions and the difficulties. 3000 w. Eng News—Dec. 20, 1906. No. 81082.

A New Zealand Method of Sewage Treatment for Isolated Buildings. John Mitchell. Extracted from "Some Thoughts Upon Rural Sanitation and Suggestions for a Betterment." 1800 w. Eng News—Oct. 31, 1907. No. 87990.

The Relation of the Suspended Matter in Sewage to the Problem of Sewage Disposal. Harrison P. Eddy and Almon L. Fales. Gives some of the results of the practical operation of various methods of sewage purification at the disposal works in the city of Worcester, Mass. Ills. Discussion. 18000 w. Jour Assn of Engng Socs—Sept., 1906. No. 80548 C.

Sanitation in the Suburbs of Paris (Assainissement de la Banlieue de Paris). Describes principally the Suresnes sewerage siphon under the Seine and outlines other projects for the purification of the waters of the river. Ills. 2400 w. Génie Civ—Sept. 7, 1907. No. 87610 D.

The Treatment and Disposal of Sewage. John D. Watson. Condensed paper, read before the annual congress of the Inc. San. Assn. of Scotland. Discusses the oxidation and nitrification of septic tank liquor, the design of percolating filters and settling tanks. 3800 w. Eng News—Nov. 1, 1906. No. 80178.

The Sewage Purification Problems, with Special Reference to Sewage Discharge into a Tidal Estuary. James D. Williamson, M. D. Deals with conditions at Belfast, and cities similarly situated, discuss-

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ing the effect of sewerage discharged into tidal waters. General discussion. 8800 w. Jour Roy San Inst—Feb., 1907. No. 82288 B.

Municipal Sewage Experiment Stations. Editorial discussion of the progress made in sewage treatment, with suggestions for subjects still needing investigation in connection with this work. 3000 w. Eng News—Feb. 28, 1907. No. 82675.

The Bacterial Treatment of Sewage, with Special Reference to the Biolysis of Organic Nitrogen. W. D. Scott-Moncrieff. Briefly considers the successive stages in the breaking down of organic matter, especially discussing the third, or nitrifying changes. Diagrams, tables, and discussion. 7800 w. Jour Ry San Inst—April, 1907. No. 83585 B.

Nitrification of Sewage. George Reid. Summary of a paper read before the Ry. Soc. Discusses the construction of filter beds so as to afford the largest possible surface for bacterial growth under healthy conditions. 3000 w. Jour Roy San Inst—April, 1907. No. 83586 B.

The Common Sense of Sewage Pollution. George Ethelbert Walsh. Discusses the proper disposal of municipal sewage. The present article considers the land treatment. 1500 w. Dom Engng—April 6, 1907. Serial. 1st part. No. 83506.

Sewage Disposal Tanks for the Isolated House. Illustrates and describes flush tanks suitable for handling sewage in the process of its disposal. 1800 w. Met Work—April 27, 1907. No. 83932.

The Determination of the Organic Nitrogen in Sewage by the Kjeldahl Process. Leyland Whipple. Presents results of experiments carried out on direct reading of Kjeldahl digestates, giving a procedure that has been found successful. 2200 w. Tech Qr—June, 1907. No. 85717 E.

The Use and the Abuse of Sewage Purification Plants. A. Elliott Kimberly. Condensed from paper read before the Ohio Engng. Soc. Discusses particularly the neglect of such plants in the State of Ohio. 4500 w. Eng News—Aug. 29, 1907. No. 86637.

The Use and Abuse of Sewage Purification Plants. A. Elliott Kimberly. Read before the Ohio Engng. Soc. Discusses the question of protection afforded by such plants to rivers and bodies of water, and the causes of failure when this protection is not accomplished. 5400 w. Eng Rec—Aug. 31, 1907. No. 86691.

Advance in Sewage Purification. Alexander Potter. From a paper before the League of Am. Municipalities. Considers legislative enactments and practice in

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America. 3000 w. Munic Engng—Dec., 1906. No. 80951 C.

Sewage Disposal by Dilution. George C. Whipple. Considers the subject from the viewpoint of the public health, and also from the viewpoint of nuisance. Discussion. 10000 w. No. 71. Pro Brooklyn Engrs' Club—1906. No. 85977 N.

Modern Methods of Sewage Treatment (Über Moderne Abwasser-Reinigungsmethoden).—Dunbar. Address to the Section of Sanitary Technology, Hamburg. Review of most advanced systems of sewage treatment in Europe and the U. S. Ills. Serial. 2 parts. 11300 w. Zeitschrift des Österreichischen Ingenieur und Architekten Vereines—Nov. 16 and 23, 1906. No. 81833 each D.

Examination and Purification of Sewage (Abwasserfrage und Abwasserreinigung). A. Nolte. System of treatment in use in Cologne and other cities of Europe described. Illus. Serial. 2 parts. 5100 w. Stahl u Eisen—Jan. 23 and 30, 1907. No. 82950 each D.

See also Gary, Ind., and Manila, under MUNICIPAL.

## Sewers.

Constructing a Sewer Under the Brooklyn Subway. Describes the construction of a curved by-pass 290 ft. long, explaining the conditions and requirements. Ills. 2000 w. Eng Rec—Aug. 31, 1907. No. 86689.

Methods and Costs of Constructing a Section of Brick Sewer, the Tunnel Method of Excavating Being Used. Information and drawings relating to a sewer in Syracuse, N. Y. 3500 w. Engng Con—Nov. 14, 1906. No. 80364.

Sewerage Construction Work. Describes some of the machinery being adopted for this work. Excavators, conveyors, etc. Ills. 2500 w. Munic Jour & Engr—May 1, 1907. No. 84032 C.

Notes on the Sewers in Manhattan Borough, New York City. Outlines the general plan and the materials used, the repairs and maintenance. 1800 w. Eng Rec—Dec. 15, 1906. No. 80994.

Rainfall, and Run-Off in Storm-Water Sewers. Charles Emerson Gregory. Aims to bring together matter contained in previous discussions and to propose a more rational method of solution. 9200 w. Pro Am Soc of Civ Engrs—Nov., 1906. No. 80935 E.

Sewerage and Storm-Water Drainage in Johannesburg. D. C. Leitch, and G. S. Burt Andrews. A brief review of the principal features of the work now in progress. 5 plates. 15600 w. Jour S

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African Assn of Engrs—Oct., 1906. No. 80922 F.

Sewerage and Storm-Water Drainage in Johannesburg. Discussion of paper on this subject by D. C. Leitch, and G. S. Burt Andrews. 6500 w. Jour S African Assn of Engrs—Nov., 1906. No. 81518 F.

Methods and Cost of Constructing a Large Reinforced Concrete Sewer at St. Louis, Mo. An unusual piece of sewer work is illustrated and described. The methods of construction and the cost are given. 900 w. Engng-Con—Feb. 20, 1907. No. 82476.

Reinforced Concrete Sewers and Conduits, in the United States of America. Ernest Romney Matthews. Illustrates and describes a number of sewers and conduits which have been constructed on this principle in American cities. 3800 w. Inst of Civ Engrs, No. 3645—No. 84459 N.

Sewer Construction in Holland (De Riolering van S. Gravenhage). F. C. J. Van Der Steen Van Ommeren. Ills. Serial. 2 parts. 14000 w. De Ingenieur—Dec. 8 and 15, 1906. No. 82314 each D.

The Bronx Storm Relief Sewer Tunnel. A sewer under construction from Webster Ave. to the Harlem River is illustrated and described. 4000 w. Eng Rec—March 2, 1907. No. 82721.

Method of Constructing a 6-ft. Sewer Siphon Under a 16-ft. Conduit, Chicago, Ill. Illustrates and describes an interesting piece of work executed recently in connection with the construction of the Intercepting Sewer System. 700 w. Engng-Con—May 22, 1907. No. 84536.

Cost of Trenching, Pipe-laying and Backfilling for Sanitary Sewer Construction at Centerville, Iowa. Gives table showing the man hours and unit cost for each job separately. 1200 w. Engng-Con—June 12, 1907. No. 85035.

Back-Filling Trenches. George C. Warren. Read at Detroit, before the Am. Soc. of Munic. Imp. Discusses some difficulties in connection with back-filling of trenches in city streets both as regards

### WATER SUPPLY

### Albany, N. Y.

efficiency and economy. 3000 w. Eng Rec—Oct. 5, 1907. No. 87448.

Large Riveted Steel Sewers in Jersey City, N. J. Illustrates and describes an 8-ft. storm-water sewer under construction to serve the thickly settled Hudson City section. 1600 w. Eng Rec—July 13, 1907. No. 85544.

A Large Sewer Project in St. Paul, Minn. Plan and description of the construction of a deep drop shaft and tunnel as part of a system to serve a manufacturing district. 1200 w. Eng Rec—Oct. 5, 1907. No. 87443.

### Smoke.

Steps in the Development of a Smokeless City. W. F. M. Goss. Read before the Indiana Acad. of Science. Suggests measures for rendering a city smokeless. 2500 w. Munic Engng—April, 1907. No. 83596 C.

The Smoke Nuisance and Industry (Die Rauchplage und die Industrie). Etienne de Fodor. Various systems of prevention and consumption of smoke discussed. Serial. 2 parts. 9600 w. Elektrotechnik und Maschinenbau—March 3 and March 10, 1907. No. 83-637 D.

### Stone Crushing.

A Large Stone-Crushing Plant at Gary, Ill. Illustrated description of a new plant having a rated capacity of 300 cu. yds. an hour. 1800 w. Eng Rec—March 30, 1907. No. 83372.

### Street Cleaning.

Street Cleaning in the Central Business District of Chicago. An illustrated article explaining the work done by the Citizens' Street Cleaning Bureau, and stating the conditions and cost. 4800 w. Eng Rec—May 25, 1907. No. 84565.

### Town Extensions.

The Planning and Control of Town Extensions in Germany. T. C. Horsfall. An interesting account of the excellent result due to power given to the municipal authorities. 3000 w. Eng News—Dec. 20, 1906. No. 81079.

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### Air-Lift.

Emergency Air-Lift Equipment for Deep Wells, Marion City, (O.) Water Co. Edward H. Cowan. Illustrates and describes an ingenious but simple piece of engineering work. 800 w. Eng News—Dec. 13, 1906. No. 80969.

### Albany, N. Y.

Improvements to the Water Supply System of Albany, N. Y. Information in regard to the new filter plant and increase in capacity of the Quackenbush St. pumping station. Ills. 1200 w. Eng Rec—May 18, 1907. No. 84430.



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### Analysis

#### Analysis.

Water Analysis for Steam Users. John B. C. Kershaw. The present number considers the sources of natural water supply and the physical and chemical characteristics as far as they have any bearing upon the use of such waters for steam-raising. 2500 w. Mech Engr—Nov. 10, 1906. Serial. 1st part. No. 80474 A.

The Analysis of Chalybeate Waters. C. Chester Ahlum. Explains the method employed by the writer. 1500 w. Jour Fr Inst—Jan., 1907. No. 81904 D.

The Volhard Method for the Determination of Chlorine in Potable Waters. Frank T. Shutt and H. W. Charlton. Trans. Roy. Soc. of Canada. Describes this method for the estimation of chlorine in waters, and compares its accuracy with the "chromate" method, showing its superiority when very small amounts of chlorine are to be determined. 1200 w. Min Rept—Jan. 17, 1907. No. 81713.

The Use of Lactose Bile Media in Water Analysis. Daniel D. Jackson. Abstract of a paper read before the Am. Pub. Health Assn. Concludes that by the employment of this new media more definite results on the sanitary quality of a water may be obtained than by any other test at present in use. It is also especially valuable in the testing of filter plants. 1000 w. Eng News—March 14, 1907. No. 83131.

The Hamburger Test for Pollution (Der Hamburger Test auf Fäulnisfähigkeit). Dr. Korn and Dr. Kammann. Tables. 3900 w. Gesundheits Ingenieur—March 16, 1907. No. 83642 D.

#### Aqueducts.

Details of the Catskill Aqueduct, New York. Illustrates and describes portions of this great conduit and the general method of construction to be followed. 2000 w. Eng Rec—Nov. 10, 1906. No. 80326.

Report on the Proposed 226-Mile Aqueduct for the Water Supply of Los Angeles, Cal. Report upon the project for obtaining an additional supply of water from the Owens River and its tributaries. Ills. 6500 w. Eng News—Jan. 24, 1907. No. 81767.

The Owens River Aqueduct for the Los Angeles Water Supply. Principally notes from the engineer's report on the plans for an aqueduct over 200 miles long, having a capacity of about 400 cubic ft. per second and a total fall of about 3,500 ft. built through a country ranging from rough to mountainous. Ills. 4800 w. Eng Rec—Jan. 26, 1907. No. 81952.

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### Cast-Iron Pipe

Repairing a Limestone Concrete Aqueduct. Michael Ratcliffe Barnett. An account of the leakage in the Thirlmere aqueduct, which conveys water to Manchester, Eng., due to deterioration of the concrete, resulting from the action of water on the limestone with which the concrete was made. Ills. 7500 w. Inst of Civ Engrs, No. 3636—No. 84466 N.

See same title, under BRIDGES.

#### Artesian Wells.

Artesian Wells in Australia. Editorial on the great artesian basin of Australia; its geology, characteristics, its great value, etc., and the legislation controlling it. 2000 w. Engng—Sept. 6, 1907. No. 87080 A.

#### Berlin.

Water Supply of Berlin (Die Wasserversorgung Berlins). Herr Anklaam. Description of the supply and distributing system. Ills. 4200 w. Gesundheits Ingenieur—Jan. 26, 1907. No. 82352 D.

#### Bore Holes.

Determining the Direction of Deep Bore Holes and Testing Their Water Tightness. Illustrates and describes an instrument devised by John J. Horan for use in connection with the work of building the great aqueduct that is to carry additional water to New York City. 800 w. Eng News—May 23, 1907. No. 84858.

#### Brockton.

The New Water Supply of the City of Brockton. Charles R. Felton. An account of the new supply from Silver Lake, the trouble with organisms affecting the water, and the construction of the works. Ills. Also discussion. 5000 w. Jour N Eng W-Wks Assn—Dec., 1906. No. 81095 F.

#### Canal Sections.

The Effect of Changes in Canal Cross-Sections Upon Rate of Flow. F. W. Hanna. Develops formulæ for solving problems often occurring in irrigation work. 1500 w. Eng News—Sept. 26, 1907. No. 87246.

#### Carbonic Oxide.

The Importance of Carbon Dioxide in Water-Supply Projects (Die Bedeutung der Freien Kohlensäure im Wasserversorgungswesen). Hartwig Klut. A discussion of its hygienic and technical effects. 7700 w. Gesundheits Ing—Aug. 10, 1907. No. 86976 D.

#### Cast-Iron Pipe.

Some Observations on Cast-Iron Pipe Specifications. William R. Conrad. Short paper and general discussion of the New

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### Charleston

England specifications, and the report of the Committee on Standard Specifications. 7500 w. Jour N Eng W-Wks Assn—March, 1907. No. 83339 F.

### Charleston.

New Water Supply for Charleston, S. C. J. W. Ledoux. Gives a brief historical review of the water supply from the earliest settlement of Charleston, and explains why the Goose Creek supply was decided upon. Also a description of the water-works plant, and other information. Ills. 5000 w. Pro Engrs' Club of Phila—Oct., 1906. No. 80233 D.

### Cleveland, O.

The Quality of the Water Supply of Cleveland, O. George C. Whipple. A résumé of report made to the Water Department concerning an investigation of the quality of the water of Lake Erie in the vicinity of Cleveland. 6500 w. Eng Rec—Nov. 10, 1906. No. 80323.

### Concrete Pipes.

The Testing of Clay and Concrete Pipes. Abstracts of parts of a report of Burchartz and Stock of the royal building material testing department in Gross-Lichterfelde upon tests of clay and cement pipes. 1600 w. Munic Engng—Oct., 1907. No. 87395 C.

Cement Sewer Pipe. Two short papers, by Rudolph Hering, and by Robert W. Lesley, comparing the merits of cement and vitrified clay. 2700 w. Cement Age—April, 1907. No. 83788.

Small Cement Pipe for Irrigation. Albert Eugene Wright. Data on the construction, cost and strength. 2000 w. Cal Jour of Tech—Oct., 1907. No. 87980.

Processes and Machines for the Production of Reinforced-Cement Poles and Pipes (Verfahren und Maschine zur Erzeugung von Armirten Zement-Masten und -Röhren). Hans Siegwart. Ills. Serial. 1st part. 1400 w. Beton u Eisen—May, 1907. No. 84955 F.

New Coupling for Cement Pipe. (Neue Verbindung von Betonrohren). R. Saliger. Illus. 1200 w. Beton und Eisen—Dec., 1906. No. 81862 F.

### Dams.

The New Croton Dam. An illustrated description of the design and construction of this large masonry dam for the additional water supply of New York City. 1700 w. Engr, Lond—April 12, 1907. Serial. 1st part. No. 83885 A.

The Isthmian Canal Dams in the Light of the Wachusett Dam Landslip. Lindon W. Bates. Describes the slip occurring April 11, on the north dike of the Wa-

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chusetts reservoir, and compares the design for the Gatun dam for the Panama Canal. Ills. 3500 w. Engng-Con—July 17, 1907. No. 85772.

The Cataract Dam, Sydney, New South Wales. L. A. B. Wade. An illustrated description of the largest dam in Australia with an account of the discharge volume of flood water over it during construction. 700 w. Eng News—Dec. 6, 1906. No. 80843.

The Cataract Dam, Sydney, New South Wales. Illustrated description of 'this masonry and concrete dam, constructed to supplement the storage of water for the city of Sydney. The total storage capacity is 21,411,500,000 gallons. 2000 w. Engng—Feb. 1, 1907. No. 82257 A.

Cataract Dam, New South Wales. Brief illustrated description of the largest dam in Australia. 2500 w. Aust Min Stand—May 1, 1907. No. 84870 B.

Progress of Construction on the Cross River Dam. Illustrated description of construction work on the dam near Katonah, N. Y., designed to impound about nine billion gallons of water to be delivered to the city of New York. 4000 w. Eng Rec—Jan. 5, 1907. No. 81488.

The Design of the New Croton Dam. Edward Wegmann. An illustrated paper considering the design of the dam adopted for the new Croton reservoir constructed to store an additional water supply for New York City. 9800 w. Pro Am Soc of Civ Engrs—Jan., 1907. No. 81911 E.

Completion of the Cross River Dam, Croton Water-Works System. An illustrated account of this masonry dam which is to impound about 9,000,000,000 gallons of water for the increased supply of New York City. 3000 w. Eng Rec—Sept. 14, 1907. No. 87025.

Hydraulic Excavation and Dam Building at the Croton and Lyons Dams in Michigan. William G. Fargo. Illustrates and describes the plant and the work. 2500 w. Eng News—Oct. 24, 1907. No. 87872.

Specifications for the Main Dams, Ashokan Reservoir, New York City Water Supply. Gives sections from the specifications, with illustrations and explanatory notes, for a high masonry dam with earth wings. 2000 w. Eng News—Aug. 1, 1907. No. 86074.

Crocker's Reef Dam Across the Hudson at Ft. Edward. Herbert Spencer. Illustrates and describes this rock-fill dam built in connection with the improvement of the Champlain Canal. 1500 w. Eng Rec—Oct. 5, 1907. No. 87447.

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Method of Constructing the Crockers Reef Dam, New York Barge Canal, Near Fort Edward, N. Y. Lindon Bates, Jr. Describes the first dam of the New York Barge Canal. It is mainly of second-class concrete, requiring about 3550 cu. yds. Ills. 1200 w. Engng-Con—July 10, 1907. No. 85563.

A Résumé of the Charles River Basin Project. Robert E. Barrett. Describes the construction of a roadway dam, architecturally beautiful, between the cities of Boston and Cambridge, forming a fresh water basin. Gives many illustrations. 2200 w. Harvard Engng Jour—Jan., 1907. No. 82619 D.

The Metropolitan Water Works System of Massachusetts. Caleb Mills Saville. Brief illustrated description of the construction of the Wachusett dam on the Nashua River, at Clinton. 1800 w. Munic Engng—July, 1907. No. 85715 C.

A Remarkable Dam at Dellwood Park, Ill. Howard S. Knowlton. Rather unusual dam and bridge construction of reinforced concrete is illustrated and described. 700 w. Eng Rec—Feb. 9, 1907. No. 82228.

A Large Reinforced-Concrete Dam at Ellsworth, Me. Brief description of a dam under construction which has probably the highest head of any structure of this type yet attempted. 1000 w. Eng News—May 23, 1907. No. 84492.

The Dhukwa Dam. Illustrated detailed description of a project for building a dam across the Betwa River in India, giving the interesting features and information of interest. 3000 w. Engr, Lond—May 17, 1907. No. 84585 A.

The Dam with Subterranean Flood Sluices at Marklissa (Le Barrage avec Evacuateurs de Crues Souterrains de Marklissa). A. Dumas. A description of this dam on the Queis in Germany, at which the flood water is carried off through subterranean conduits. Ills. 6000 w. Génie Civil—June 15, 1907. No. 85616 D.

A Buttressed Concrete Dam. A stone dam at Matteawan, N. Y., raised 7 ft. by an addition of buttressed concrete is illustrated and described. 2000 w. Eng Rec—Aug. 24, 1907. No. 86562.

Movable Crest Dams at the Water Power Development of the Chicago Drainage Canal. Illustrated detailed description of movable crests of structural steel and steel plates, designed to furnish a passage for all drift which cannot safely pass through the water turbines. 3500 w. Eng Rec—Aug. 24, 1907. No. 86555.

Reconstructing a Masonry Dam for In-

creased Depth of Storage. An unusual piece of dam-building, near Lennep, Germany, in connection with the water supply system, is illustrated and described. 600 w. Eng News—Aug. 29, 1907. No. 86629.

The Construction of the Dam of the Nevada-California Power Co. Describes a dam to be built of loose rock puddled on the upper side, across a narrow valley at a high altitude in the Sierra Nevada Mts. Ills. 1200 w. Eng Rec—Aug. 3, 1907. No. 86092.

A Collapsible Steel Dam Crest, Bear River, Near Garland, Utah. J. C. Wheelon. Illustrated detailed description of a collapsible steel dam crest invented by the writer. It can be attached to either masonry or timber dams. 1000 w. Eng News—Oct. 3, 1907. No. 87421.

The Upper Grays Dam, Consolidated Water Co., Utica, N. Y. Illustrates and describes a dam built under unusual conditions as to foundations, and unusual requirements as to future extension. 600 w. Eng Rec—July 20, 1907. No. 85794.

Cheesman Dam. George T. Prince. Illustrates and describes the engineering features of this granite dam on the South Fork of the South Platte River. It has a height sufficient to store a depth of 212 feet of water and was constructed for the supply of the City of Denver. 3300 w. Pro Am Water Wks Assn—1906. No. 85816 N.

The Largest Movable Dam of the Bear-trap Type in the Country. W. C. Weeks. Illustration, with brief description and history of this dam on the Spokane River, at Post Falls, Idaho. 1200 w. Elec Rev, N. Y.—Nov. 3, 1906. No. 80253.

The Mercedes Dam, Mexico. James D. Schuyler. Illustrated description of a dam nearing completion near Pasaje, Durango, Mexico. It was built largely by hand labor. 2800 w. Eng News—Nov. 1, 1906. No. 80175.

The Assuan Dam Protective Works. Details from the last report of A. L. Webb relating to the preventing of further erosion from the pressure of water discharged through the sluices of the dam. 2500 w. Builder—March 9, 1907. No. 83094 A.

The Stresses on Masonry Dams. Editorial review of a recent paper by Prof. Karl Pearson. 2000 w. Engng—Sept. 13, 1907. No. 87212 A.

Masonry Dams. Thomas G. Bocking. Gives examples illustrating the constructional practice of the five continents. Diagrams. 1500 w. Engr, Lond—Sept. 27, 1907. No. 87528 A.

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Technical Conditions Determining the Design of Dams (Norme tecniche che dovrebbero presiedere al connaudo dei muri di sbarramento). Domenico Barsanti. Diagram. 2500 w. L'Elettricità—Jan. 25, 1907. No. 82902 D.

Experiments on Material for Cold Springs Dam, Umatilla Irrigation Project, Oregon. D. C. Henny and E. G. Hopson. Outlines this project and the earth dam 3,200 ft. long, with a maximum height of 82 ft., explaining the methods of sampling and testing the materials available for its construction. Diagrams. 3500 w. Eng News—March 7, 1907. No. 82795.

See also Cofferdams and Piling, under CONSTRUCTION; Breakwater, under MEASUREMENT; New York City, under WATER SUPPLY; Debris Barrier, under WATERWAYS AND HARBORS; and Hydro-Electric, under ELECTRICAL ENGINEERING, GENERATING STATIONS.

## Drainage-Areas.

The Yield of Catchment-Areas. Ernest Prescott Hill. Suggests a system of observations to obtain information upon which the design of water-works can be based. 2200 w. Inst of Civ Engrs, No. 3641—No. 84467 N.

## Dry Regions.

The Procuring of Water in Dry Regions (Die Gewinnung von Wasser in Trocken Gegenden). Hermann Hædicke. An illustrated description of methods of procuring water where wells or surface water are not available. 3300 w. Gesundheits Ing—Aug. 3, 1907. No. 86975 D.

## Edinburgh.

The Talla Water-Supply of the Edinburgh and District Water-Works. William Archer Porter Tait. An account of this scheme and its execution, which increases the supply at a cost of £1,250,000. 15000 w. Inst of Civ Engrs, No. 3611—No. 84465 N.

## Expansion.

Expanding Water Supply Systems. J. T. Fanning. Discusses the losses due to undue expansion of the pipe lines, and the remedy. General discussion. 2500 w. Pro Am Water Wks Assn—1906. No. 85808 N.

## Filtration.

Copper Sulphate for Water Filtration. Dr. Adolphe Kemna. Abstract of a paper read before the Assn. of Water Engrs. On the destruction of organisms that make the water offensive, giving results obtained with copper sulphate. General

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discussion. 8000 w. Jour Gas Lgt—Dec. 18, 1906. No. 81256 A.

Development of Mechanical Filtration. F. B. Leopold. Brief review of the history of filtration of public supplies. 3500 w. Fire & Water—Dec. 29, 1906. No. 81317.

Different Methods of Purifying Water. P. A. Maignen. Gives much valuable information concerning processes of filtration, and chemical treatment, with illustrations. Discussion follows. 20500 w. Pro Engrs' Club of Phila—Jan., 1907. No. 82547 D.

Theory of Artificial Biological Filters (Zur Theorie Kunstlicher biologischer Filter). S. K. Dzierzgowsky. Tables, diagrams. Serial. 2 parts. 9300 w. Gesundheits Ingenieur—Jan. 5 and 12, 1907. No. 82306 each D.

Modern Tendencies in Filtration. George C. Whipple. Brief consideration of the latest theories, sand filters, mechanical filters, preliminary treatment, etc. 18000 w. Munic Jour & Engr—June 5, 1907. No. 84768 C.

Experiments with a Jewell Filter at the Posen Water Works. E. A. Gieseler. Explains the sources of supply and the remarkable results obtained by mixing in certain proportions the "Herzog" and "Eichwald" water, describing tests made of a Jewell filter. 2500 w. Eng Rec—Aug. 10, 1907. No. 86317.

Contractors' Plant and Methods on the Construction of the Pittsburg Filtration Plant. Robert Swan. Illustrated detailed description of the construction of a plant covering an area of about 125 acres, and having a daily filtering capacity of 3,000,000 gallons. 4000 w. Eng News—Nov. 29, 1906. No. 80769.

The Water Filter of the Jacob Tome Institute. Illustrated description of this filtration plant at Port Deposit, Md. 2500 w. Eng Rec—Nov. 24, 1906. No. 80576.

The Pittsburgh Filtration Plant. Illustrated detailed description of the slow-sand filtration plant, for treating the water supply, which is under construction. 5400 w. Eng Rec—Dec. 8, 1906. Serial. 1st part. No. 80908.

The Filtration-Works for Supplying the Town of Alexandria with Potable Water. Henry Robert Cecil Blagden. Describes the first works of this kind in Egypt, this being the first town in Egypt to have an efficient filtration system. The Jewell system. 2 plates. Inst of Civ Engrs—No. 3615. No. 82038 N.

The Mechanical Filtration Plant at Wilmington, N. C. A. O. True. States the conditions of the water supply of

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### Filtration

this city, and gives an illustrated description of the filtration plant. 1300 w. Eng Rec—Feb. 9, 1907. No. 82226.

The Mechanical Filters of the Water Works of Harrisburg, Pa. Describes some of the leading features and methods of operation. Ills. 6500 w. Eng Rec—March 9, 1907. No. 82864.

The Water Filtration Plant of Harrisburg, Pa. Illustrated description of the new plant for filtering Susquehanna river water and its operation. 3000 w. Munic Engng—Sept., 1907. No. 87132 C.

Notes on Water Filtration in Japanese Cities. George A. Johnson. Notes on the Tokyo water-works, and the Osaka works, with illustrations. 4000 w. Eng Rec—May 11, 1907. No. 84318.

Operation of the New Haven Water Co.'s Filter Plant. Charles A. Ferry. Read before the Conn. Soc. of Engrs. Reports the operation of the Whitneyville filtration plant which supplies about 8,500,000 gals. per day. 3000 w. Eng News—May 9, 1907. No. 84293.

Sand Filters at Bar Harbor, Me., and South Norwalk, Conn., for the Removal of Organisms, Tastes and Odors from Water. H. W. Clark. Brief illustrated descriptions of these filters. 1600 w. Eng News—May 23, 1907. No. 84493.

The Slow-Sand Filtration Plant and Other Water-Works Improvements at Denver, Colorado. Illustrates and describes important changes recently made to the system, including three new filters, a system of underground wooden galleries, pumping plant, etc. 3000 w. Eng Rec—June 22, 1907. No. 85204.

The American System of Filtration Plant at Damietta, Egypt. Edmund B. Weston. Outlines the history of this town, and briefly describes its former water-works, giving an illustrated description of the new plant. 2500 w. Eng Rec—May 4, 1907. No. 84220.

The Filtration of Water at Bolton. L. Mitchell. General remarks on the progress of filtration methods and the efficiency of slow sand filters, with illustrated description of the mechanical filters at the Bolton water-works, stating their advantages. 4000 w. Engng—June 7, 1907. No. 85112 A.

The Water Filtration Plant at Moline, Ill. Illustrated description of a plant with a normal capacity of 5,000,000 gal. in 24 hours. 4800 w. Eng Rec—June 15, 1907. No. 85058.

Filtration of Water. F. A. W. Davis. Illustrated detailed description of the slow sand filtration plant of the Indianapolis Water Co., with tabulated summary of re-

### WATER SUPPLY

Hackensack, N. J.

sults. 2500 w. Pro Am Water Wks Assn—1906. No. 85797 N.

The Circular Tanks at the Lancaster Filtration Plant. Illustrates and describes the coagulating and softening tanks of unusual design and operation. 1200 w. Eng Rec—Sept. 14, 1907. No. 87030.

Experiments on the Preliminary Treatment of Water at Washington, D. C. A report of experiments being carried on by the engineers of the filtration plant, which is of the slow-sand type. 2000 w. Eng Rec—May 25, 1907. No. 84568.

See also Percolating Beds and Purification, under WATER SUPPLY.

### Fire Protection.

Maintenance Methods and Detailed Costs of Car House Fire Protection in Cleveland. An illustrated account of the ways and means of taking care of the extensive sprinkler system installed. 2500 w. St Ry Jour—March 30, 1907. No. 83359.

See also High Pressure and Sprinkler Systems, under WATER SUPPLY.

### Freezing.

The Freezing of Water Plugs (L'Incongelabilité des Bornes-Fontaines). A. Bergés. Methods of preventing freezing of water plugs and types of apparatus designed for this purpose. Ill. 2500 w. Génie Civil—Mar. 9, 1907. No. 82977 D.

### Germany.

Water Economy and Storage in Germany (Die Wasserwirtschaft und der Talsperrenbau in Deutschland). Emil Grohmann. Review of different sources of water supply, and location of dams. Illus. 2200 w. Oest Wochenschrift f d Oeffentlichen Baudienst—Feb. 16, 1907. No. 82929 D.

### Ground Water.

Fluorescein in the Study of Underground Waters. An account of the use of this coal-tar product for the study of conditions in subterranean basins. Notes from a paper by R. B. Dole, published by the U. S. Geol. Survey. 2200 w. Eng Rec—Dec. 29, 1906. No. 81312.

The Flow of Underground Water. William Ralph Baldwin-Wiseman. Experimental research work made to investigate the relationship between the porosity of a rock and the flow of water through its interstices, under various pressures. 7000 w. Inst of Civ Engrs—No. 3504 No. 80533 N.

Hackensack, N. J.

Increasing the Capacity of the Hacken-

## CIVIL ENGINEERING

### High Pressure

sack Water Company's System by Introducing a Relay Pumping Station, as Compared with Cost of Building a New Force Main. D. W. French. An illustrated article, with map, explaining conditions and describing the plant at New Durham. Also gives the official test of the 12-million gallon Allis engine located at this station. 3000 w. Pro Am Water Wks Assn—1906. No. 85807 N.

### High Pressure.

The Diminution of the Diameter of High Pressure Water Conduits (Die Verjüngung der Rohrweite bei Hochdruckleitungen). Philipp Forchheimer. Brief mathematical discussion of economical diameters and thicknesses of pipes at places where the pressures are different. Diagrams. 600 w. Zeitschr d Ver Deutscher Ing—Dec. 1, 1906. No. 81153 D.

High-Pressure Fire Systems. F. L. Hand. Read before the Am. Water-Wks. Assn. Discusses the cost of Philadelphia's high-pressure pumping system and cost of maintenance, and gives a comparison of different systems. 5500 w. Ins Engng—Dec., 1906. No. 81406 C.

High Pressure Water Systems. F. L. Hand. An illustrated description of the Philadelphia high pressure fire service, giving estimates of first cost and cost of operation and maintenance. 10000 w. Pro Am Water Wks Assn—1906. No. 85815 N.

Proposed Auxiliary High Pressure Fire Protection Water Supply for Hartford, Conn. Particulars from an interesting report recently submitted to the Common Council. 800 w. Eng News—July 18, 1907. No. 85733.

### High Water.

The Utilization of High Water at Water Power Plants (Die Ausnutzung von Hochwasser bei Wasserkraftanlagen). H. E. Gruner. Illustrated description of experiments at Chèvres, on the Rhone, and Vessy, on the Arve, to lower the water level in the tail race, by manipulating the sluice gates, at times of high water. Tables. 800 w. Zeitschr d Ver Deutscher Ing—Nov. 10, 1906. No. 80617 D.

### Hong Kong.

The Tytam Tuk Water-Works, Hong Kong. D. Jaffé. Illustrated description of new works in progress to increase the water supply. The new reservoir is 200 ft. below the level of the inlet to the tunnel of the original works, and the water is pumped. 1800 w. Eng Rec—May 25, 1907. No. 84562.

### WATER SUPPLY

#### Hydraulic Formulae.

Hydraulic Formulae: Development and Discussion. Develops a General Equation of discharge, and, from it, derives the various formulae for flow through orifices and over weirs of the shapes usually considered. 6500 w. Sch of Mines Qr—July, 1907. No. 86647 D.

#### Intake.

An Infiltration Water-Works Intake Under the Ohio River. Describes an intake built of well point strainers buried in the sand bottom of the Ohio River which has been in successful operation nearly a year. Ills. 1600 w. Eng Rec—Aug. 31, 1907. No. 86688.

#### Irrigation.

Water Rights and Irrigation in Canada and the United States, with the Lessons to be Derived Therefrom for the Dutch East Indies (Waterrechten en Irrigatiewetgeving in Canada en de Vereenigde Staten van Noord-Amerika en Lessen te Trekken voor Nederlandsch Indie). R. A. van Sandick. General review. 5000 w. Ingenieur—Oct. 27, 1906. No. 80646 D.

Irrigation in Western Canada. A report of the first Canadian Irrigation Convention, recently held at Calgary, Alberta. 3000 w. Engng—Aug. 30, 1907. No. 86872 A.

Irrigation Colonies in India. Laurence Robertson. Deals especially with the methods adopted for peopling these tracts. Discussion. 13800 w. Jour Soc of Arts—June 14, 1907. No. 85232 A.

Irrigation in India. C. Q. Burge. Deals particularly with the work in the Punjab and Scinde. 3000 w. Eng Rec—June 29, 1907. No. 85326.

Irrigation in the Transvaal. Michael Richard Collins. Considers problems in connection with this work, deducing the run-off, flood, discharge, and duty which appear to be applicable in the design of storage-reservoirs, etc. Describing also some existing Government works. Ills. 5000 w. Inst of Civ Engrs—No. 3622. No. 80544 N.

Egyptian Irrigation and the Assuan Dam. Information contained in a recent despatch from Lord Cromer concerning the benefits this reservoir has conferred on Egypt, and matters related. 2500 w. Engr, Lond—April 26, 1907. No. 84260 A.

A New Egyptian Irrigation Canal. J. B. Van Brussel. Illustrated description of a canal built of riveted steel, and a reinforced concrete service reservoir, forming a part of the scheme for irrigating

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### Irrigation

125,000 acres in Egypt. 1500 w. Sci Am—Aug. 17, 1907. No. 86418.

**A Remarkable Combination of State and Corporate Action in a Wyoming Irrigation System.** An outline of a novel plan for the development of irrigation for a portion of the Shoshone Indian Reservation in Wyoming, opened for settlement June 15, 1906. 1000 w. Eng News—Dec. 20, 1906. No. 81080.

**Proposed Irrigation System of the Wyoming Central Irrigation Co. for the Ceded Portion of the Shoshone or Wind River Indian Reservation.** H. G. Raschbacher. An account of the surveys made and specifications agreed upon. Ills. 4500 w. Purdeu Engng Rev—1907. No. 85,930 N.

**The Possibility of the Permanent Reclamation of Tulare Lake Basin, California.** Charles H. Lee. Discusses the problem of the reclamation of this overflow sand. Describes the situation and conditions, and considers its reclamation feasible both from an engineering and financial standpoint. 4500 w. Eng News—Jan. 10, 1907. No. 81556.

**Irrigation and Drainage Problem in Stanislaus Co., Cal.** C. S. Abbott. Describes the irrigation system of the Modesto-Turlock district, the harm caused by too much water, and methods used to remedy the trouble. Ills. 1500 w. Cal Jour of Tech—Aug., 1907. No. 87095.

**Irrigation Works in Arizona.** C. L. Gates. Treats of the reclaiming of the arid lands for agriculture, by irrigation, giving the cost of the Salt River storage tank and its accessories. 2300 w. Jour Assn of Engng Socs—Dec., 1906. No. 81910 C.

**The Government Irrigation Project at Roosevelt Dam, Salt River, Arizona.** Prof. Oscar C. S. Carter. Remarks on the irrigation of this region before the Government took the matter in charge, with information of the projects since carried out or under construction, especially the Roosevelt dam. Ills. 7500 w. Jour Fr Inst—April, 1907. No. 83758 D.

**Irrigation and the Government Irrigation Project at Yuma.** Prof. Oscar C. S. Carter. Reviews the early history of irrigation in various parts of the world, and describes the conditions in the semi-arid and arid regions of the United States, and the irrigation projects under consideration and construction, with information relating to the Yuma project. Ills. 7000 w. Jour Fr Inst—March, 1907. No. 83171 D.

**The Construction of Irrigation Works by the U. S. Reclamation Service.** Re-

### WATER SUPPLY

### Marshfield, Wis.

views past work and the large projects now being carried out, especially the Truckee-Carson project. 2800 w. Eng News—Nov. 1, 1906. No. 80184.

**The Minidoka Irrigation Project, U. S. Reclamation Service.** C. J. Blanchard. Illustrated description of the dam and distributing system of this reclamation work in Idaho. 3000 w. Eng Rec—March 2, 1907. No. 82713.

**The Reclamation of the North Platte Valley.** W. S. Coulter. An illustrated description of the North Platte irrigation project. 1800 w. Pop Sci M—April, 1907. No. 83279 C.

**Millions for Moisture.** C. J. Blanchard. An illustrated account of the work of the United States reclamation service. 6400 w. Nat Geog Mag—April, 1907. No. 83853 C.

**Evaporation Losses in Irrigation.** Samuel Fortier. Reviews studies recently made to determine the losses by evaporation in irrigation in the state of California. Ills. Also editorial. 4800 w. Eng News—Sept. 19, 1907. No. 87113.

See also **Concrete, Contractor's Plant, and Tunnels, under CONSTRUCTION; and Canals, under WATERWAYS AND HARBORS.**

### Isolated House.

**Water Supply for the Farm Home.** Elmina T. Wilson. Extract from a Bul. of the U. S. Dept. of Agriculture, relating to the water supply of farm homes. 3000 w. Met Work—March 30, 1907. No. 83319.

### Koeta Radja.

**The Procuring of Pure Water at Koeta Radja (De Drinkwatervoorziening van Koeto Radja).** H. Heetjans. Illustrated description of the project, tunnel, canal, etc. 7000 w. De Ingenieur—April 13, 1907. No. 84190 D.

### Los Angeles.

**Los Angeles Water Supply.** Details of the proposed scheme to bring water 200 miles at a cost of over \$24,400,000. Map. 2200 w. Engr, Lond—Feb. 8, 1907. No. 82471 A.

### Marietta, Ga.

**The Water-Works System and Electric Lighting Station at Marietta, Ga.** Illustrated account of the reconstruction of the water-works system and electric power station to meet the increasing demands of service. 1800 w. Eng Rec—Feb. 23, 1907. No. 82522.

### Marshfield, Wis.

**The Improvements to the Water Supplies of Marshfield and Waupaca, Wis.** W. G. Kirchoffer. Explains the existing

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## Massachusetts

conditions and the natural ground water supplies developed to increase and improve the water. 1800 w. Eng News—Jan. 31, 1907. No. 82021.

## Massachusetts.

The Metropolitan Water-Works System of Massachusetts. Caleb Mills Saville. Reviews the history, giving an account of the organization and description of the works. 2500 w. Munic Engng—June, 1907. No. 85175 C.

Metropolitan Water Works. Dexter Brackett. An illustrated detailed description of these extensive works, which will supply nineteen municipalities within the present district. 10000 w. Pro Am Water Wks Assn—1906. No. 85817 N.

The Metropolitan Water Supply System. Caleb Mills Saville. Illustrated description of reservoirs, aqueducts, and pumping stations belonging to the system that supplies Boston and vicinity. 2000 w. Munic Engng—Aug., 1907. No. 86038 C.

## Meters.

Comments on Some French Tests of Water Meters. Clemens Herschel. Critical comments on the tests named, with remarks on tests made in America. 1000 w. Eng News—Jan. 3, 1907. No. 81377.

Meter Registration. Arthur N. French. An account of a water meter which registered when no water was passing through the pipes, explaining the cause and remedy. General discussion. 6800 w. Jour N Eng W-Wks Assn—March, 1907. No. 83338 F.

Some New Facts Relating to the Effect of Meters on the Consumption of Water. William S. Johnson. Gives information on the use and waste of water, discussing why results expected from metering were not realized. General discussion. 17000 w. Jour N Eng Water Wks Assn—June, 1907. No. 85897 F.

Venturi Meters at Rio de Janeiro. Illustrates and describes an elaborate plant comprising not less than twenty separate Venturi meters, which will measure the waters received from as many sources of supply, the flow being recorded not only locally but also transmitted to a central station. 2000 w. Engng—Feb. 22, 1907. No. 82835 A.

Simplex Water Meter. J. W. Ledoux. Describes the development of design and application of this meter to the flow of water through pipes. Ills. 1500 w. Pro Am Water-Wks Assn—1906. No. 85811 N.

See also Pitometer, under WATER SUPPLY.

## WATER SUPPLY

## Penstock

## Milwaukee, Wis.

The Kinnickinnic River Flushing Tunnel and Pumping Station, Milwaukee, Wis. Illustrates and describes methods adopted to overcome troubles from river pollution. 2000 w. Eng Rec—July 27, 1907. No. 85944.

## Mödling, Austria.

The Water Works System of Mödling (Das Wasserwerk der Stadt Mödling). Paul Frenz. Describes the hydro-electric power station, pumping plant, pipe lines and reservoir of the water system of this Austrian town. Ills. 3000 w. Elektrotech u Maschinenbau—June 9, 1907. No. 85659 D.

## Montreal.

Montreal's Water Supply. An account of proposed improvements with the estimated cost. 1700 w. Can Engr—April 5, 1907. No. 83504.

## New Orleans.

The New Orleans Water Works. George G. Earl. From a paper before the Am. Soc. of Munic. Imp. Describes the water purification plants and distribution system proposed for this city. 3500 w. Munic Engng—Dec., 1906. No. 80950 C.

## New York City.

Progress on New York City's Catskill Water Supply System: Dams of the Ashokan Reservoir. Map, illustrations and outline of the plans for increasing the supply by 500,000,000 gals. per day. 1000 w. Eng News—May 9, 1907. No. 84296.

Inauguration of Work on the Catskill New York Water Supply. Map of the proposed system with brief account of inauguration of this gigantic enterprise. 1500 w. Sci Am—June 29, 1907. No. 85314.

## Oregon.

The Water Supply of the Oregon Short Line at Pocatello, Idaho. Describes an extensive system supplying division shops and furnishing water for general railroad use. Illustrates details. 2000 w. Eng Rec—April 27, 1907. No. 83944.

## Pennsylvania.

The Work of the Pennsylvania Water Supply Commission. An account of the work undertaken by this commission, what has been accomplished, etc. 3300 w. Eng Rec—March 16, 1907. No. 83067.

## Penstock.

The Second Penstock of the Kubel Hydro-Electric Plant (Die Zweite Druckleitung des Elektrizitätswerkes Kubel). L. Kürsteiner. Well illustrated description of steel pipe, 63 inches inside



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## Percolating Beds

diameter and 981 feet long, siphoning out of the reservoir and crossing a stream by an arch; near St. Gall. 1200 w. Schweiz Bauzeitung—Nov. 3, 1906. No. 81101 B.

## Percolating Beds.

The Time of Passage of Liquid Through Percolating Beds. William Clifford. A report of investigations, giving tabulated results. 800 w. Eng News—Oct. 17, 1907. No. 87739.

New Method of Determining the Direction and Rate of Percolation of Ground Water (Neue Verfahren zur Bestimmung von Richtung und Geschwindigkeit der Grunwasserströmungen). Reinhold Ulfert. Illus. 2300 w. Gesundheits Ingenieure—March 23, 1907. No. 83644 D.

## Peru.

The Water Powers of Peru. Their Development and Possible Applications. Emile Guarini. A general outline of the opportunities, the principal streams adapted to immediate utilization, the existing plants and markets for power, and the proposed scheme for developing power from Lake Titicaca. 2500 w. Engineering Magazine—Dec., 1906. No. 80697 B.

## Pipe.

Comparison between Elliptical and Circular Section Earthenware Sewer Pipes. (Das Wirtschaftliche Wertherhältnis zwischen den ei und ellipsenförmigen und den kreisförmigen Steinzeugröhren bei Schmutzwasserkanalisationen). Fr. Schmidt. Tables. 1800 w. Gesundheits Ingenieur—Dec. 1, 1906. No. 81851 D.

See also Concrete Pipe, under CONSTRUCTION; and Cast Iron Pipe, Concrete Pipe, and Wood Stave Pipe, under WATER SUPPLY.

## Pipe Friction.

Experiments with Submerged Tubes 4 Ft. Square. C. B. Stewart. Describes experiments made at the University of Wisconsin on the effects of changing the length of the tube and of modifying the entrance conditions. Also outlines a plan for future experiments. Ills. 2000 w. Eng Rec—Sept. 28, 1907. No. 87312.

## Pipe Lines.

Methods Employed in Laying Three Submerged Pipe Lines. Frederick S. Wardwell. Read before the Conn. Soc. of Civ. Engrs. Describes the methods of laying outfall pipes at Stamford and at Shippan Point, and a pipe across the Housatonic River, at Shelton, Conn. 2000 w. Engng-Con—March 6, 1907. No. 82784.

Laying a Submerged Water Main in

## WATER SUPPLY

the River South Esk, at Montrose. Herbert Hall. Describes the method of laying. 1200 w. Jour Gas Lgt—Dec. 18, 1906. No. 81257 A.

A 48-in. Riveted Steel Pipe Line at Kansas City, Mo. C. K. Allen. An account of difficulties encountered in laying these large water pipes, describing and illustrating methods of construction. 2000 w. Eng Rec—March 2, 1907. No. 82730.

A 7-Ft. Steel Pipe Line at St. Louis. Describes the construction of this line, 19,634 ft. in length, in connection with the improvements to the water supply system of St. Louis, Mo. 1500 w. Eng Rec—Sept. 7, 1907. No. 86787.

On a More Economical Profile for Pressure Conduits of Iron or Steel Plates (Sul Profilo piu Economico delle Condotte Forzate in Lamiera di Ferro o d'Acciaio). A. Anastasi. Mathematical Paper. Plate. 7000 w. Ami della Soc Ing e d Arch Ital—Vol. XXI, No. 3. No. 84127 F.

Testing with a Scraper for Obstructions in a Long Water Main. Extract from a paper by R. H. Dorman, describing the passing of a scraper through the whole length of a pipe laid in Ireland, to make sure that no obstructions existed which might interfere with the flow. 1500 w. Eng News—May 30, 1907. No. 84698.

Extension and Improvements in the Supply Main, Yarmouth, N. S. George H. Robertson. An illustrated article giving a short description of the gate house, intake pipes and supply main, and methods used for extension and cleaning. 600 w. Pro Am Water Wks Assn—1906. No. 85801 N.

See also High Pressure, under WATER SUPPLY.

## Pipe Sizes.

A Solution of the Problem of Determining the Economic Size of Pipe for High-Pressure Water-Power Installation. Arthur L. Adams. Gives a solution worked out by the author stating the assumptions upon which it is based. 900 w. Pro Am Soc of Civ Engrs—May, 1907. No. 84560 E.

A Solution of the Problem of Determining the Economic Size of Pipe for High-Pressure Water-Power Installation. Discussion of paper by Arthur L. Adams on this subject. 4000 w. Pro Am Soc of Civ Engrs—Aug., 1907. No. 86641 E.

Graphic Methods of Calculating Conduits for Gas, Air, and Water (Abaques pour le Calcul des Conduites de Gaz, d'Air et d'Eau). A. Grebel. Mathe-

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### Pipe Tunnels

matical explanation of the methods illustrated by examples. Ills. 2500 w. Génie Civil—April 13, 1907. No. 84114 D.

### Pipe Tunnels.

See Tunnels, under CONSTRUCTION.

### Pitometer.

The Pitometer, J. D. Underwood. Deals with the use of the pitometer for locating leakage or theft of water from the mains and service pipes of a water-works system. Ills. Also discussion. 4000 w. Pro Engrs Soc of W Penn—Dec., 1906. No. 81061 D.

See also Waste, under WATER SUPPLY.

### Pollution.

Stream Pollution by Acid-Iron Wastes; and the Sewage Works at Shelby, Ohio. Reviews a recent report by Herman Stabler on behalf of the U. S. Gov. Surv., and the Ohio State Board of Health, giving the final summary. 1500 w. Eng News—Nov. 22, 1906. No. 80558.

Report on the Pollution of the Water Supply of Philadelphia by Coal Wastes. Gives the report of Messrs. Fairchild and Gilchrist on coal dirt pollution. 2000 w. Eng News—March 21, 1907. No. 83204.

Contamination of the Water Supply of the City of Breslau (Uebelstände in der Grundwasserversorgung der Stadt Breslau). A. Friedrich. Discussion of the analysis and suggestions for improvement. 1200 w. Oest Wochenschrift f d Oeffentlichen Baudienst—Feb. 9, 1907. No. 82936 D.

The Detection of Pollution in Underground Waters, and Methods of Tracing the Source Thereof. John C. Thresh. Before the Assn. of Water Engrs. Reports utility tests made by the use of salt, fluorescin, and other substances. 5000 w. Engr, Lond—June 14, 1907. No. 85249 A.

Some Relations of Stream Pollution and Water Purification. Charles Carroll Brown. Discusses the problems of stream pollution and the legal limitations; the legislation in various countries, and various parts of the United States; the damage to water supplies; the sources of water supply and the purification of water, etc. 9000 w. Wis Engr—June, 1907. No. 85128 D.

The Work of the Ohio State Board of Health on Water Supply and Sewage Disposal. R. Winthrop Pratt. An outline of the work in connection with pollution, its prevention and rectification. 2800 w. Eng News—June 20, 1907. No. 85154.

River Pollution. Marshall O. Leighton. A discussion of its present status and sug-

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gestions concerning remedial policy. Discussion. 6500 w. Pro Am Water Wks Assn—1906. No. 85799 N.

A Judicial Review of American Stream Pollution Decisions. A review recently written by Judge Hainer of the Oklahoma Supreme Court. 4500 w. Eng Rec—June 29, 1907. No. 85323.

Water Softening for Municipal Supplies. George W. Fuller. Considers some of the more important features upon which the treatment depends, and illustrates typical works. Discussion. 8500 w. Pro Am Water Wks Assn—1906. No. 85802 N.

See also Typhoid Fever, under WATER SUPPLY.

### Pond Water.

A Remarkable Experience with Pond Water. Notes from a paper by Herbert B. Baldwin and George C. Whipple, presented at the convention of the American Public Health Assn., concerning the investigation made of the cause of the sudden destruction of fish in Weequahic Lake, Newark, N. J. 2500 w. Eng Rec—Dec. 8, 1906. No. 80909.

### Protection.

On the Protection of Public Water Supplies from Pollution During the Construction, Maintenance, and Operation of Railroads, with Special Reference to the Water Supply of Seattle, Washington; Together with Criticisms of the Present Methods of Water Supply and Sewerage of Railway Trains. William T. Sedgwick. 22800 w. Jour N Eng W-Wks Assn—Dec., 1906. No. 81066 F.

Prevention of the Bacterial Contamination of Streams and Oyster Beds. W. Pollard Digby and H. C. H. Shenton. Aims to show that methods of sewage treatment have been recently devised by which the dangerous qualities of sewage may be wholly eliminated. Plate. 10300 w. Soc of Engrs—Dec. 3, 1906. No. 80954 N.

The Washington Typhoid Situation and How the Baltimore Water Department Has Protected its Supply Without Filtration. Alfred M. Quick. An account of the work done, and of the investigations which tend to show that infection was not from the water supply. 2500 w. Eng News—Nov. 29, 1906. No. 80770.

### Pumping Stations.

A Rock-Cut Bomb-Proof Pumping Station at Gibraltar. Albert Wilson. Describes a station built to make secure, in time of war, the supply of water for sanitary and domestic use. 1500 w. Inst of Civ Engrs, No. 3528—No. 84460 N.

## CIVIL ENGINEERING

### Purification

The Pelham Pumping Station of the New Rochelle Water Co. Illustrated description of a small station to supplement a gravity supply. 1200 w. Eng Rec—June 15, 1907. No. 85059.

High-Pressure Fire-Service Pumping Station at Coney Island. B. Franklin Hart, Jr. Illustration, with description of the station and report of tests. 2000 w. Stevens Ind—April, 1907. No. 85124 D.

The Growth of the Pumping Station. Charles A. Hague. Reviews the development, especially during the last twenty years, the types, and the future outlook. Discussion. 9600 w. Pro Am Water Wks Assn—1906. No. 85809 N.

See under MECHANICAL ENGINEERING, HYDRAULICS.

### Purification.

Copper Sulphate Results. James M. Caird. Presents results of treatment for algæ growths and bacteria by copper sulphate. 3300 w. Pro Am Water Wks Assn—1906. No. 85805 N.

Disinfection as a Means of Water Purification. George C. Whipple. Describes water-works at Ostende and Middelkerke, Belgium, where chlorine is used as a disinfecting adjunct to filtration. Gives list of articles on the manufacture and application of ozone. Discussion. 6800 w. Pro Am Water Wks Assn—1906. No. 85806 N.

The Massachusetts Position Regarding Pollution of Streams by Mill Wastes. Gives the text of the court's statement regarding stream pollution. 2000 w. Eng Rec—Aug. 10, 1907. No. 86316.

Court Decision Against the Pollution of a Brook in Dracut, Mass., by the American Woolen Co. An explanation of the case with the decision. 3500 w. Eng News—Sept. 5, 1907. No. 86756.

Notes on Sewage Purification and Public Water Supplies. M. N. Baker. Outlines some of the available methods of sewage treatment, giving definitions of processes, and a bibliography. Discussion. 3500 w. Pro Am Water Wks Assn—1906. No. 85798 N.

Direct and Indirect Methods of Electrical Purification of Water. Henry Leffmann. Considers some of the processes that have come under the writer's notice, giving an illustrated description of a plant in operation on the Schuylkill River, Philadelphia. 1800 w. Jour Fr Inst—Sept., 1907. No. 87089 D.

Electrolytic Treatment of Water for Technical Uses. Dr. Herman Fleck. Reports of electro-filtration tests made at

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Denver, Colo. 1000 w. Min Rept—Oct. 17, 1907. No. 87799.

Water Supply. An informal discussion of whether it is better policy to control water-sheds, or to rely upon filtration. 8800 w. Pro Am Soc of Civ Engrs—Aug., 1907. No. 86643 E.

Water Supply. Informal discussion on whether it is better to control water-sheds or rely on filtration to purify the water. 2500 w. Pro Am Soc of Civ Engrs—Sept., 1907. No. 87714 E.

The Removal of Iron from the Water Supply of Reading, Mass. Describes the methods adopted for the purification of water containing iron and also vegetable matter. 2500 w. Eng Rec—Dec. 1, 1906. No. 80818.

Notes on Water Purification at St. Louis. W. F. Monfort. Abstract of a paper read before the Am. Water-Wks. Assn. A brief statement of chemical and bacterial results for the past year at one of the larger plants using lime and iron sulphate as coagulants, without the use of filters. 2500 w. Eng Rec—July 27, 1907. No. 85947.

Water Purification at St. Louis, Mo. Edward E. Wall. An illustrated description of the plant and process for clarifying and purifying the water supply, and the conditions previous to its use. 7000 w. Pro Am Soc of Civ Engrs—Sept., 1907. No. 87712 E.

Contractor's Plant and Methods Water Purifying and Softening Works, Columbus, Ohio. George E. Howe. An illustrated general description of a pumping station to house the pumps to be used for supplying the purifying and softening works with water and to deliver water from them to the city. 2200 w. Eng Rec—March 2, 1907. No. 82727.

Water Purification at Fostoria, O. Illustrations, with description of a recently constructed sand filter, taken from a paper by W. J. Sherman. 700 w. Eng Rec—March 23, 1907. No. 83219.

The Cincinnati Water Purification Plant. E. G. Monahan, and J. W. Ellms. Illustrated description of the plant and method of operation, reviewing the past history of the water supply, and giving costs. 7000 w. Eng Rec—April 6, 1907. No. 83479.

New Water Purification Plant at Exeter, N. H. Robert Spurr Weston. Illustrated detailed description of a new plant consisting of a concrete coagulating basin, covered with an arched roof, adjoining two filters and a pipe gallery. Its operation is described. 2300 w. Eng News—Aug. 8, 1907. No. 86309.

### Purification

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## Purification

The Water Purification and Softening Works at New Orleans, La. Illustrates and describes two plants for filtering and softening the Mississippi River water. 1500 w. Eng Rec—Aug. 31, 1907. No. 86690.

Examination of Water Purification Plant at Owensboro, Ky. Philip Burgess. Gives report of an examination made of a recently completed plant, with special reference to results obtained. 2000 w. Eng Rec—Sept. 28, 1907. No. 87306.

The Water Purification Plant of Harrisburg, Pa. Describes the operation of the filters and the apparatus used. Ills. 3500 w. Munic Engng—Oct., 1907. No. 87392 C.

Water Softening and Purification Plant of the Pennsylvania Railroad at Hartsdale, Ind. Illustrated description of a recently installed plant. 1400 w. Ir Trd Rev—Oct. 10, 1907. No. 87539.

Discussion on Water Supply. Discussion of papers by Messrs. Tait, Barnett, and Hill. 31000 w. Inst Civ Engrs—Nov. 27, and Dec. 11, 1906. No. 84468 N.

McKeesport's Water Softening Plant. Illustrated detailed description of a 10,000,000-gallon municipal plant under construction, to use the caustic lime and soda ash process. 2500 w. Munic Jour & Engr—Sept. 4, 1907. No. 86827 C.

The Beissel Water-Softener. Illustrates and describes an automatic water-softening apparatus. 1700 w. Engng—Aug. 30, 1907. No. 86870 A.

See also Filtration, Pollution, and Sterilization, under WATER SUPPLY.

## ✓ Rates.

Rate for Water Service. Dabney H. Maury. Presidential address before the Am. Water-Works Assn. Outlines the principles which should govern the determination of the fair rate. 1500 w. Eng. News—June 27, 1907. No. 85301.

## Reservoirs.

The Cost of Cleaning and Grubbing a Reservoir Site. Julian Griggs. Gives details of cost of cleaning and grubbing the site of the reservoir formed by the construction of the Scioto River Storage dam for the municipal water supply for Columbus, Ohio. 3000 w. Munic Engng—Nov., 1906. No. 80214 C.

Stripping Reservoir Sites. A brief summary of report discussing the advisability of stripping the Ashokan reservoir site of New York City's additional supply. Aeration and filtration recommended instead. 2200 w. Munic Jour & Engr—Aug. 7, 1907. No. 86128 C.

## WATER SUPPLY

The Cobb's Hill Reservoir, Rochester, N. Y. Illustrates and describes the concrete work of a 140,000-gal. reservoir now under construction. 4000 w. Eng Rec—March 2, 1907. No. 82717.

New Reservoirs at Walton. Leading particulars, with illustrations, of two large reservoirs under construction on the south side of the Thames. 1600 w. Engr, Lond—April 19, 1907. No. 84007 A.

The Settling Reservoirs of the New Cincinnati Water-Works. William C. Jewett. Illustrated detailed description of the construction of these reservoirs. 2500 w. Eng Rec—June 8, 1907. No. 84850.

The Barren Jack Reservoir, New South Wales. Gives a general outline of the Barren Jack irrigation scheme, and describes the design of the dam and weir. 3000 w. Engng—July 5, 1907. No. 85589 A.

Is It Worth While to Strip the Surface Soil from Reservoir Sites? Report on Stripping the Ashokan Reservoir Site; Additional Water Supply, New York City. Full abstract of the report of Allen Hazen and George W. Fuller, with its conclusions against stripping. 6500 w. Eng News—Jan. 3, 1907. No. 81376.

A Colorado Mountain Reservoir. R. M. Hosea. Deals with the Sugar Loaf reservoir near Leadville, giving its history, describing the construction, and giving cost. Ills. Discussion. 7000 w. Jour W Soc of Engrs—Aug., 1907. No. 87140 D.

The Empire Reservoir of the Bijou Irrigation District, Colorado, and its Eight Dams. Map and sections, with description of the sand chutes, and general information. 800 w. Eng News—Jan. 3, 1907. No. 81375.

The Reinforced Concrete Reservoir at Waltham, Mass. Bertram Brewer. Illustrated detailed description of the construction of this reservoir. 1500 w. Eng Rec—Jan. 12, 1907. No. 81573.

Repairing a Remarkable Leak in a Reservoir Embankment at Providence, R. I. Extract from report of Otis F. Clapp, describing the work. 600 w. Eng News—Oct. 17, 1907. No. 87740.

Arrangement of Water Power Storage Reservoir. (Neuerungen an hydraulischen Akkumulieranlagen). Fritz Golwig. Description of a mode of regulating flow of water to a penstock by an auxiliary storage basin and electric control. Ills. 3300 w. Elektrotechnik und Maschinenbau—Dec. 2, 1906. No. 81825 D.

See also Earth Slip, under CONSTRUCTION.

## Reservoirs

# CIVIL ENGINEERING

## Review

## WATER SUPPLY

St. Louis

### Review.

Water Supply. A review of the works completed and projected during 1906 both in England and other countries. 2800 w. Engr, Lond—Jan. 4, 1907. No. 81660 A.

### Run-Off.

Comparison Between Rainfall and Run-off in the Northeastern United States. John C. Hoyt. A study based on information collected by the U. S. Government, and by private parties, in regard to precipitation and stream run-off. Tables and map. 2500 w. Pro Am Soc of Civ Engrs—May, 1907. No. 84559 E.

### Rust.

Rust in Water Pipe Lines and Means of Prevention (Rost in Wasserleitungen, Schutz- und Vorbeugungsmittel). H. Wehner. The first part discusses the agencies which cause rusting of iron pipes and the effect of atmospheric conditions. Ills. 11000 w. Serial. 1st part. Gesundheits Ing—April 20, 1907. No. 84184 D.

### Siphons.

Liberation of Air in Siphons. Charles Anthony, Jr. Gives an experiment made in connection with work in South Africa. 350 w. Pro Am Soc of Civ Engrs—Jan., 1907. No. 81913 E.

Reinforced Concrete Siphon of the Rio Sosa, Spain (Siphon en Beton Armé du Rio Sosa). Henry Martin. A siphon system for supplying 370 cubic feet of water a second for irrigation projects in Spain. Ill. 5800 w. Génie Civil—Mar. 16, 1907. No. 82971 D.

A Reinforced-Concrete Siphon on an Irrigation Canal in Spain. Illustrates and describes the construction of a siphon carrying the main canal across the valleys of the Sosa and the Ribabona, having a total length of about 3,200 ft. 1000 w. Eng News—Aug. 1, 1907. No. 86076.

The Building of the Siphon of Suresnes (Notice sur l'Exécution des Travaux du Siphon de Suresnes). M. Caldaquès. A description of the construction of this steel siphon, 340 metres long, a part of the Paris scheme for the purification of the waters of the Seine. Ills. 10000 w. Ann d Ponts et Chaussées—Part I, 1907. No. 85603 E + F.

### Sluices.

Automatic Sluice in the Bondman Weir Across the Aire at Leeds. Illustrated description of this work executed in connection with sanitary measures on the River Aire. 1400 w. Engng—May 17, 1907. No. 84579 A.

Large Electrically Operated Gates for the Roosevelt Dam, U. S. Reclamation Service. F. W. Hanna. Illustrated detailed description of the gates to be installed, which are the largest in the world operated under the pressure to which they will be subjected. 2700 w. Eng News—May 30, 1907. No. 84696.

The Reinforced Concrete and Steel Headgates for the Imperial Canal, Colorado River. James D. Schuyler. Illustrates and describes these large headgates, their construction and operation. 1000 w. Eng News—Dec. 27, 1906. No. 81284.

### Sprinkler Systems.

Hazard of the Sprinkler Tank. J. E. Curtis. Discusses the erection and maintenance, the requirements for hoops, etc. 1500 w. Ins Engng—Jan., 1907. No. 82059 C.

The Care of Sprinkler Systems. Henry A. Fiske. Information concerning the proper maintenance of this protection, common faults that should be remedied, with suggestions relating to heads and valves. 4800 w. Ins Engng—Jan., 1907. No. 82058 C.

Sprinkler Systems of Fire Protection in the Claffin Store Building, New York. Plans and description of the distribution of heads and arrangement of piping for a 10-story and basement structure. 1600 w. Eng Rec—March 9, 1907. No. 82863.

### Standpipes.

Reinforced Concrete Standpipes. Illustrates and describes standpipes built at Fort Revere, Mass., Milford, O., and Attleboro, Mass., showing them to be more durable and cheaper than steel. 2000 w. Munic Jour & Engr—Dec. 5, 1906. No. 80867 C.

Reinforced Concrete Stand-Pipe at Attleboro, Mass. Illustrated detailed description of the construction of a structure 50 ft. in diameter and 106 ft. high. 2000 w. Eng News—Feb. 21, 1907. No. 82534.

### St. Catharines, Ont.

St. Catharines' Waterworks. An illustrated historical account of this supply, stating the advantages secured through agreement with the Hamilton Cataract Power Company. 1500 w. Can Engr—July 5, 1907. No. 85407.

### St. Louis.

The New Settling Basins and Other Improvements to the St. Louis, Mo., Water Supply System. Additions and extensions including two new settling basins, a 7-ft. steel pipe flow line, and a storage reservoir are illustrated and described.

## CIVIL ENGINEERING

### Sterilization

5500 w. Eng Rec—July 6, 1907. No. 85458.

The Chicago Drainage Canal Case. William P. Mason. A brief historical sketch of the suit brought by the city of St. Louis to stop the diversion of Chicago sewage into the Mississippi valley. Introductory to abstracts of testimony by John W. Hill, Robert Spurr Weston, T. J. Burrill, Gardner S. Williams, Edwin O. Jordan, Leonard P. Kennicutt, Rudolph Herring, George W. Fuller, Allen Hazen, and others. 2500 w. Pro Am Water Wks Assn—1906. No. 85804 N.

### Sterilization.

The Use of Ozone for the Sterilization of Water. Illustrates and describes a transportable ozone plant, and other arrangements of the apparatus to meet industrial requirements. 1400 w. Prac Engr—Oct. 26, 1906. No. 80296 A.

A Sterilized Water-Supply at Leavesden Asylum. William Thomas Hatch. Illustrates and describes the sterilizing apparatus, reporting tests made, coal consumed, and experiments in connection with the design of the apparatus. 3300 w. Inst of Civ Engrs—No. 3606. No. 82037 N.

New Apparatus for the Sterilization of Drinking Water by Heat. Illustrates and describes the system of operation of the Forbes water-sterilizing system. 4000 w. Eng News—Oct. 31, 1907. No. 87987.

Stationary Water Sterilizing Apparatus. (Stationärer Trinkwasserbereiter). Herr Haefcke. Describes sterilizers for use in public buildings to furnish from 500 to 10000 liters per hour. Illus. 1900 w. Gesundheits Ingenieure—Oct. 27, 1906. No. 81853 D.

### Stream Discharge.

See same title, under MEASUREMENT.

### Supply.

The Struggle for Water in the Great Cities of the United States. Marsden Manson. Presents certain features of the great problems of municipal water supply. Considers ownership, and those requiring change of source or expensive treatment. New York and San Francisco are taken as examples. 8000 w. Jour Assn of Engng Socs—March, 1907. No. 83765 C.

### Tank.

A Large Water Tank With Vertical Bracing and Top Stiffening Ring. Illustrates and describes an unusually large tank at Rochester, N. Y. 500 w. Eng News—Nov. 15, 1906. No. 80446.

### WATER SUPPLY

#### Towers.

The Krestovsky Twin Water Towers at Moscow. Notes on the water system of Moscow, with illustrations of the twin towers and information of interest relating to them. 1200 w. Eng Rec—Feb. 2, 1907. No. 82107.

#### Typhoid Fever.

I. The Prevalence and Causation of Typhoid Fever in Washington, D. C. Theodore Horton. II. Comments Upon Mr. Horton's Report Upon the Typhoid Fever Situation in the District of Columbia. William T. Sedgwick. The first gives the results of a careful study of the situation. Also editorial on the two papers. 10500 w. Eng News—Nov. 8, 1906. No. 80335.

Official Report on Typhoid Fever in Washington, D. C., in 1906. Information from this comprehensive report, with editorial comment. 6500 w. Eng News—July 11, 1907. No. 85577.

Engineering Studies of a Typhoid Outbreak at the State Hospital, Trenton, N. J. From the report of the State Sewerage Commission showing it to be due to the pollution of a portion of the water supply. Also a report by Dr. Henry Mitchell attributing the outbreak to personal contact. 4500 w. Eng News—Oct. 3, 1907. No. 87422.

The Rôle of Public Water Supplies in the Spread of Typhoid Fever as Shown Chiefly by the Greatest Typhoid Epidemics. George A. Soper. Considers some of the ways in which water supplies become contaminated and how extensive the results may become. Discussion. 8500 w. Pro Am Water Wks Assn—1906. No. 85800 N.

#### Tunnels.

See same title, under CONSTRUCTION.

#### Valuation.

A Retrospect of an Arbitration on the Value of a Water Works. Albert H. Wehr. Gives a statement of the method of value appraisal in the case with the City of Baltimore. Discussion. 8000 w. Pro Am Water Wks Assn—1906. No. 85813 N.

#### Waste.

The Photo-Pitometer and Water Works Losses. Edward S. Cole. Considers the waste of water and means for its control, and the use of the photo-pitometer for measuring the flow. Illustrates and describes the instrument. 4500 w. Tech Qr—June, 1907. No. 85716 E.

Water-Waste Investigations in Philadelphia. Reports investigations under-

## CIVIL ENGINEERING

### Water Towers

taken to measure the amount of water delivered by each pump to determine whether the pumps were operated economically; to ascertain whether the reservoirs were leaking; and to determine just what becomes of the water after it leaves the reservoirs. 2700 w. Eng Rec—Oct. 5, 1907. No. 87442.

### Water Towers.

See Reinforced Concrete, under CONSTRUCTION.

### Water-Works.

The Water-Works System of Ilion, N. Y. Illustrates and describes works to supply wholesome water to a village of about 6,000 inhabitants, reviewing the history. 3000 w. Fire & Water—Jan. 19, 1907. No. 81715.

Water-Works Constructions in America. Ernest Romney Matthews. Detailed description of American methods of design and construction of such works. Ills. 4500 w. Soc of Engrs—May 6, 1907. No. 84485 N.

The New Water-Works at Wilmington, Del. An illustrated article describing the new reservoir, and slow-sand filters, new pumping plant, force and distribution mains, and the reinforced-concrete Van Buren St. bridge. 3800 w. Eng Rec—May 4, 1907. No. 84225.

Some Notes on Oriental Water-Works. George A. Johnson. Read before the Am. W.-Wks. Assn. Describes features of Japanese water-works, and of the works at Shanghai, China, Singapore, Straits Settlements, and Bethmangala, and Calcutta, India. 5800 w. Eng Rec—Aug. 24, 1907. No. 86560.

### WATERWAYS AND HARBORS

### Blasting

#### Wells.

Sinking a Flowing Well for the Water-Works of Salem, Va. J. N. Ambler. Describes the work of sinking, the difficulties and methods of overcoming them. 2500 w. Eng News—Feb. 7, 1907. No. 82186.

Sinking and Lining a 6-ft. Well 80-ft. Deep in Water-Bearing Soils. Information concerning work of excavating a well for a shot tower at East Alton, Ill., through sand, gravel and clay, which carried large quantities of water, and providing a perfectly water-proof concrete lining under very difficult conditions. 2000 w. Eng Rec—Feb. 16, 1907. No. 82414.

The Formation of a Concrete Well-Lining by Cement-Grouting Under Water. Robert William Vawter. Describes the method of carrying out this work, which illustrates one of the many uses to which Portland-cement grout may be applied. 2000 w. Inst of Civ Engrs—No. 3616. No. 82036 N.

Water Supplies by Means of Artesian Bored Tube-Well. Herbert F. Broadhurst. Read before the Inst. of Min. Engrs. Describes methods used in boring artesian tube-wells, and for their protection, testing and pumping. 4000 w. Ir & Coal Trds Rev—June 14, 1907. No. 85251 A.

#### Wood-Stave Pipe.

The Wood-Stave Pipe Line of the Madison River Power Company. W. E. Belcher. Describes this pipe line in western Montana. 800 w. Eng & Min Jour—Aug. 24, 1907. No. 86556.

## WATERWAYS AND HARBORS

### Amsterdam.

The Improvement of the North Sea Canal (De Verbetering van het Noord-zeeKanaal). H. Wortman. Well illustrated description of the widening and deepening of the canal from Amsterdam to the North Sea, and of its bridges, locks, etc. 7000 w. Ingenieur—Oct. 20, 1906. No. 80644 D.

### Appalachian Streams.

Southern Appalachian Streams. Charles E. Waddell. Considers their characteristics and prominent features, their utilization as power producers, etc. Ills. 3500 w. Jour Fr Inst—Sept., 1907. No. 87087 D.

### Atchafalaya River.

The Atchafalaya River: Some of Its Peculiar Physical Characteristics. Discussion of the paper by J. A. Ockerson. 5800 w. Pro Am Soc of Civ Engrs—Dec., 1906. No. 81301 E.

### Bahia Blanca.

The Port of Bahia Blanca (El Puerto de Bahia Blanca). Alejandro Foster. A description of this important harbor in the Argentine Republic. Ills. 5500 w. Ingenieria—May 15, 1907. No. 85620 D.

### Blasting.

Blasting Out a Reef in New York Harbor. Brief description of methods

## CIVIL ENGINEERING

### Borings

used in unusually difficult work in New York harbor. Ills. 900 w. Sci Am—Nov. 24, 1906. No. 80593.

### Borings.

See also same title, under CONSTRUCTION.

### Breakwaters.

The Concrete Breakwater at Harbor Beach, Mich. Emile Low. An illustrated description of a new superstructure of concrete being erected on the foundations of an old breakwater. 2500 w. Eng News—March 28, 1907. No. 83320.

The Stone Breakwater at Cleveland, O. George H. Cushing. Illustrates and describes a modification in the form of construction of the stone masonry portion of the breakwater, as recommended by Lt.-Col. Curtis McD. Townsend. 1500 w. Eng News—May 23, 1907. No. 84496.

### Bruges.

The Harbor Works at Bruges and the Port of Call at Zeebrugge, Belgium (Les Installations Maritimes de Bruges et le Port d'Escale de Zeebrugge, Belgique). A. Dumas. An illustrated description of the extensive works, breakwater, docks, canal, etc., recently completed. Plate. 4500 w. Génie Civil—July 20, 1907. No. 86212 D.

Zeebrugge and Bruges. An illustrated account of the construction of new docks in Bruges and a ship canal to Zeebrugge, in the effort to restore the lost trade of this once important city. 3300 w. Engr, Lond—July 26, 1907. No. 86187 A.

### Brussels.

Water Front Improvements at Brussels (Les Nouvelles Installations Du Port De Bruxelles). J. M. Roux. Description of bridges, canal improvements, etc. Ills. 4200 w. Le Génie Civil—Jan. 12, 1907. No. 82323 D.

### Canals.

Work on the 1,000 Ton Barge Canal and on Improved Highways in New York. Extracts from the report of Henry A. Van Alstyne, state engineer, covering the work of his department for 1905 and 1906. 3800 w. Eng News—Jan. 3, 1907. No. 81374.

The Section of the Barge Canal Connecting the Hudson and Mohawk Rivers. H. P. Willis. Brief illustrated account of the interesting work on this section. 600 w. Eng Rec—March 30, 1907. No. 83373.

The New York Barge Canal Improvements. William G. Landreth Gives map and profile for the barge canal now being built, describing the location of locks and

### WATERWAYS AND HARBORS

### Canals

dams and other features of the work. 2200 w. Eng Rec—April 13, 1907. No. 83708.

The Proposed Niagara Ship Canal. Describes present conditions at the western terminus of the Erie Canal, and the proposed improvements of Black Rock harbor and channel. Illustrates the Lobnitz rock-cutter which will be used. 1500 w. Eng Rec—March 16, 1907. No. 83066.

Steam Pile and Sheet-Pile Drivers on the New York Barge Canal. Emile Low. Illustrates and describes the pile-drivers and excavators used, and the methods of carrying out the work. 1500 w. Eng Rec—March 2, 1907. No. 82734.

The Canal System of Canada. Maps and description of the canals through Canada from tidewater to the Great Lakes, and also the branches; calls attention to improvements needed to accommodate the large vessels, and the canals under construction to connect Lakes Huron and Ontario. 2200 w. R R Gaz—Feb. 15, 1907. No. 82404.

The St. Lawrence Route. S. J. McLean. A review of the canal section, its development and improvement, with information concerning the canal traffic. Map. 2500 w. Ry Age—March 1, 1907. Serial. 1st part. No. 82705.

Drainage Canal at Hertogenbosch, Holland (Het afwateringskanaal van 's Hertogenbosch naar Drongelen). J. P. Wijtenhorst. Ills. 3600 w. De Ingenieur—Dec. 29, 1906. No. 82315 D.

The Effect of the Chicago Drainage Canal on the Levels and Navigation of the Great Lakes. Quotes at some length an important report of the International Waterways Commission, with explanatory notes. The report recommends that the diversion of Lake Michigan water be limited to 10,000 cu. ft. per second. 5500 w. Eng News—Jan. 31, 1907. No. 82024.

The Chicago-St. Louis Waterway. W. Frank M'Clure. An illustrated article giving information of recent developments with reference to this project. 1500 w. Sci Am—Sept. 21, 1907. No. 87125.

The Chesapeake and Delaware Canal. Lewis M. Haupt. An introductory statement of present conditions causing congestion of traffic, urging the improvement of waterways as a remedy, and giving arguments of the Trades League of Philadelphia in favor of the construction of the Chesapeake and Delaware Canal. Ills. 5000 w. Jour Fr Inst—Feb., 1907. No. 82060 D.

The Harvey Canal and Lock. Gervais Lombard. Gives an interesting review of



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### Canals

the history of this canal in Louisiana, with a report of recent work, the difficulties and methods of overcoming them. Ills. 4000 w. Jour Assn of Engrg Soc's—June, 1907. No. 85895 C.

The Kom-Ombo Irrigation Canal. Illustrated detailed description of interesting work in connection with an extensive irrigation scheme in Egypt. Relates to the supply and erection of a riveted steel canal, about a mile in length, and the supply and erection of two riveted steel rising mains. 2500 w. Engr, Lond—March 8, 1907. No. 83120 A.

The Kaiser Wilhelm Canal. Describes briefly the methods proposed to increase the efficiency of this canal, stating the existing conditions. 1200 w. Engr, Lond—May 3, 1907. No. 84346 A.

The Somersetshire Coal Canal. Illustrates and describes this old canal in England: It is to become the site of a single line railway for the Great Western system. 1500 w. Engr, Lond—May 24, 1907. No. 84760 A.

The North Carolina-Virginia Inland Waterway. H. L. Wilson. Illustrates and describes this project, the two routes under consideration, and states the advantages of having a complete inland passage from Chesapeake Bay to and through Beaufort Inlet. Map. 1300 w. Sci Am—April 13, 1907. No. 83576.

Canals v. Railways. Ivan C. Barling. Abstracted from presidential address before the Newcastle Students' Assn. of the Inst. of Civ. Engrs. On the improvements needed to increase the efficiency of canals, especially considering British canals. 2500 w. Ir & Coal Trds Rev—Nov. 30, 1906. No. 80931 A.

See also Amsterdam, Bruges, European, French Canals, Georgian Bay Canal, Parana, and Teltow, under WATERWAYS AND HARBORS.

### Channel Improvement.

New Entrance Channel at Saint Nazaire. Map and description of an important engineering work at the mouth of the Loire River, in France. 2000 w. Engr, Lond—Aug. 9, 1907. No. 86473 A.

The West Neebish Channel of the St. Mary's River. An illustrated account of nearly completed work on this channel which will relieve the present situation and give practically a double course from Lake Superior to Lake Huron. 3500 w. Eng Rec—Aug. 3, 1907. Serial. 1st part. No. 86085.

### Coast Protection.

Fascine Protection Works at the Port

### WATERWAYS AND HARBORS

### Coast Protection

of Rosario (Puerto del Rosario: Obras de Faginado). Domingo Carrique. Illustrated description of the method used for protecting the shore by means of fascines. 2000 w. La Ingenieria—Feb. 15, 1907. No. 83672 D.

The Protection of Sea Shores from Erosion. Alfred Edward Carey. Gives examples of the magnitude of wave force, with description of the coasts of the British Isles and the methods of protecting them, and offering suggestions. General discussion. Ills. 12500 w. Jour Soc of Arts—May 3, 1907. No. 84334 A.

Repairing Damage Resulting from the Storm of March 12, 1906, on the Coast of Zeeland (Over eenige verchijselen waargenomen in Zeeland bij den stormvloed van 12 Maart 1906). R. L. R. de Muralt. Ills. 3300 w. De Ingenieur—Dec. 22, 1906. No. 82302 D.

Ferro-Concrete Sea Defences. Illustrates and describes a system of defence which is said to have proved very successful in Holland. 2000 w. Engr, Lond—March 1, 1907. No. 83001 A.

Some Improvements on Galveston Island. F. E. Lister. An illustrated account of the sea-wall, and other protective works carried out, and the work of raising the grade, describing the novel and effective method of handling the filling material. 1500 w. Purdue Engrg Rev—1907. No. 85929 N.

Sea Defence Works at Hornsea. Illustrated description of a concrete sea-wall recently constructed, as part of a scheme of protective works planned. 1200 w. Engr, Lond—Aug. 9, 1907. No. 86475 A.

Reinforced Concrete Sea Wall (Eine Dünenverkleidung mit Armiertem Beton). R. R. L. de Muralt. Description of construction of a retaining wall on the coast of Holland. Ills. 1400 w. Beton und Eisen—Nov., 1906. No. 81859 F.

The de Muralt System of Reinforced Concrete Sea Defenses. An illustrated article describing a system evolved by Mr. de Muralt, applicable to all phases of land protective work. 2500 w. Sci Am Sup—Aug. 3, 1907. No. 86066.

Ferro-Concrete Groynes Near Brighton. Illustrated description of work on the foreshore to the east of Brighton, where the high chalk cliffs have suffered from erosion by the sea. 1200 w. Engr, Lond—Sept. 27, 1907. No. 87527 A.

The Form and Energy of Sea-Waves. Gerald Otley Case and Frank J. Gray. in *The Contract Jour.* A discussion of ocean mechanics, and coast erosion. 1500 w. Sci Am Sup—Aug. 3, 1907. No. 86070.

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Colombo

WATERWAYS AND HARBORS

Connecticut Run-Off

Colombo.

Colombo Harbor. An illustrated description of the harbor works at Colombo, in Ceylon, now nearing completion. They have cost about 1¼ millions sterling, and occupied over 30 years in construction. 5500 w. Engng—Dec. 7, 1906. No. 81025 A.

Colorado River.

Colorado River Crevasse and Salton Sea—The Great Work of Control. A short account of the methods tried for restoring to its natural bed the Colorado River, which for two years has been flowing into the Salton basin, and the final success. Maps. 1800 w. Ry Age—Nov. 2, 1906. No. 80238.

Controlling the Colorado River and Salton Sea. Illustrations and diagrams showing the situation and present conditions, describing some of the measures aiming to return the river to its proper channel. 2000 w. Sci Am—Dec. 22, 1906. No. 81085.

Closing the Break of the Colorado River into the Salton Sink, Southern California. H. T. Cory. An account of this disaster while diverting a part of the water of this river for irrigation, and of the attempts made to restore the river to its old bed. Ills. 5500 w. Eng News—Dec. 27, 1906. No. 81283.

Notes on Closing the Break in the Colorado River. Illustrates phases of this difficult work, giving explanatory notes. Also editorial comment and discussion of the disaster and the methods to effect a closure. 2800 w. Eng News—Feb. 21, 1907. No. 82535.

The Lower Colorado River and the Salton Basin. C. E. Grunsky. Information based on official reports upon results of examinations made of the Colorado River's low-water course; and an account of the attempt to turn the river back into its proper channel after its overflow into the Salton Basin. Ills. 18200 w. Pro Am Soc of Civ Engrs—Feb., 1907. No. 83037 E.

The New Inland Sea. Arthur P. Davis. Describes the Colorado River and the irrigation projects for utilizing its waters, especially the disaster which turned the waters mainly into the Salton Sea, and the desperate attempts to regain control of the river. Ills. 4500 w. Nat Geog Mag—Jan., 1907. No. 82047 C.

The Possibilities of Salton Sea. Charles Alma Byers. An illustrated article considering the results that would follow the abandoning of effort to restore the Colorado River to its old channel,

and discussing the irrigation projects which led to the disaster. 2800 w. Pop Sci M—Jan., 1907. No. 81261 C.

Closing Latest Break of the Colorado River into the Salton Sea. Gives a map showing the latest break of the Colorado River, and an illustrated description of the methods of overcoming the difficulty. This break was closed Feb. 11, at 6 P. M. 800 w. R R Gaz—Feb. 15, 1907. No. 82405.

Closing the New Break in the Colorado River. H. T. Cory. An illustrated description of the break occurring in Dec., 1906, and the method of closing it. 3000 w. Eng Rec—March 2, 1907. No. 82732.

Closing the Colorado River Crevasse. H. T. Cory. A brief review of this difficult and important engineering work. 4000 w. Purdue Engng Rev—1907. No. 85943 N.

The Colorado River Closure. W. D. H. Washington. An account of the cause of the breach which caused the flooding of the Salton Sink, and of the methods tried in effecting a closure. Ills. 3000 w. Sci Am—May 4, 1907. No. 84081.

Colorado River Crevasse and Salton Sea. H. T. Cory. An illustrated account principally devoted to the work of closing the second break. Especially considers the effect on the railway lines of the Southern Pacific. 2500 w. Ry Age—June 14, 1907. No. 85085.

The Diversion of the Colorado River into the Salton Sink and the Efforts Made to Restore it to Its Former Channel. J. A. Ockerson. An illustrated account of this disaster and the various attempts made to turn the river back to its channel, and the final success. 3500 w. Jour Assn of Engng Soc's—June, 1907. No. 85894 C.

The Story of Salton Sea. An interesting account of the recent outbreak in the Colorado River on the southern border of California. 2500 w. Builder—Aug. 24, 1907. Serial. 1st part. No. 86712 A.

See also Levees, under WATERWAYS AND HARBORS.

Concrete Structures.

See Concrete and Ore Cement, under MATERIALS OF CONSTRUCTION.

Connecticut Run-Off.

Twenty Years Run-Off. at Holyoke, Mass., of the Connecticut River. Clemens Herschel. Gives a record of 20 years' weir gaugings made by the writer. 1200 w. Pro Am Soc of Civ Engrs—Nov., 1906. No. 80036 E.

# CIVIL ENGINEERING

## Danube

### Danube.

The Sulina Mouth of the Danube. An account of the radical changes made, including the elimination of curves, shortening this branch eleven miles, deepening the channel and removing obstructions, etc. 2500 w. Engr, Lond—Sept. 20, 1907. No. 87345 A.

### Debris Barrier.

Destruction of Débris Barrier No. 1, Yuba River, California. E. C. Murphy. Illustrates and describes this barrier, constructed to hold back the mining débris, giving an account of its destruction and the probable cause. 1500 w. Eng News—Aug. 8, 1907. No. 86306.

### Derrick.

Forty Ton Floating Derrick (Schwimmkran von 40 t. Tragfähigkeit). Adolf Beran. A self-propelling floating derrick for use in and about harbors. Illus. 1700 w. Zeitschrift des Vereines Deutscher Ingenieure—Feb. 2, 1907. No. 82916 D.

A Floating Derrick for Handling Heavy Rip-Rap Stone. Illustrated description of a floating derrick and grapple specially designed for the harbor work at Superior Entry, Wis. 1200 w. Eng News—May 23, 1907. No. 84494.

## Devon-Cornwall.

Proposed Harbor of Refuge Inquiry. Condensed version of the report of Sir Wm. Matthews, dealing with the proposal to construct a harbor of refuge in some locality on the North coasts of Devon and Cornwall. 3500 w. Engr, Lond—Dec. 7, 1906. Serial. 1st part. No. 81034 A.

## Docks.

The Construction of the Seaham Harbor Dock-Works. Percy Tillson Gask. Illustrated description of the construction of a new dock and protective piers. 4000 w. Inst of Civ Engrs—No. 3607. No. 80540 N.

Repairs to Dock Walls. Frederick James Rigg. Brief description of the repairs to the Humber Dock at Hull, England. 400 w. Inst of Civ Engrs—No. 3618. No. 80542 N.

The New Naval Docks at Davenport. An illustrated detailed description of this extensive addition to the naval resources of Great Britain. 7800 w. Plates. Engng—Feb. 15, 1907. Serial. 1st part. No. 82606 A.

Difficult Underpinning and Dock Work in Chicago. Illustrates and describes some complicated dock and underpinning work in connection with the increase in the width of the Chicago River. 1800 w. Eng Rec—April 20, 1907. No. 83833.

## WATERWAYS AND HARBORS

## Dredging

The Rothesay Dock at Glasgow. An illustrated description of the construction and equipment of this new dock, electricity having been adopted as the motive power. The dock was built to relieve the congestion of traffic at the mineral quays. 5400 w. Engng—April 26, 1907. No. 84253 A.

Avonmouth Docks. Gives illustrations and information of progress in the construction of the Royal Edward Dock and entrance lock. 900 w. Engr, Lond—July 5, 1907. No. 85595 A.

The New Cardiff Dock. Gives the general plan of the Bute Docks, with remarks on their growth, and a detailed description of the new South Dock. Ills. 4800 w. Engr, Lond—July 12, 1907. No. 85875 A.

The First Lake Dock of Steel. Dwight E. Woodbridge. Gives elevation and sections, with description of details of the structure to be built at Two Harbors, Minn. 2000 w. Ir Age—Oct. 3, 1907. No. 87377.

New Graving Docks and Shipyard on the River Tees. Illustrates and describes this dock scheme and proposed improvements. 1800 w. Engr, Lond—Oct. 18, 1907. No. 87964 A.

## Dredging.

Dredges (Les Dragues). A. Baril. The first instalment of this article deals with bucket dredges, outlines their history, describes various types and operations and gives details of capacity, etc., under different conditions of work. Ill. Serial. 1st part. 7000 w. Rev de Méch—March 31, 1907. No. 83681 E + F.

A New Flexible Connection for Suction Pipes of Dredges. Illustrates and describes a device designed to replace rubber hose and obviate its disadvantages. 1000 w. Eng Rec—Oct. 19, 1907. No. 87789.

A Huge and Interesting Dredging Plant for Service in India. Illustrates and describes the dredge "Foyers." The bow is of triple form, constituting two wells in which rotary cutters are mounted for excavating hard material. 1500 w. Sci Am Sup—Nov. 3, 1906. No. 80187.

A Sea-Going Bucket Dredge. Dr. Alfred Gradenwitz. Illustrated description of the Fedor Solodoff, a suction-pipe type with floating conduits, for service on the River Don and on the Sea of Azoff. 1600 w. Int Marine Engng—Nov., 1907. No. 87810 C.

A Powerful Dredge Equipped with a Cable Storage Drum. Illustrates and describes the dredge "Majestic," in use on

# CIVIL ENGINEERING

## Dredging

## WATERWAYS AND HARBORS

## Harbors

the St. Mary's River improvement, Michigan. 1600 w. Eng News—Feb. 7, 1907. No. 82183.

The Excavation of the West Neebish Channel in the St. Mary's River, Michigan. Illustrated description of important work to facilitate navigation. 3000 w. Eng News—Oct. 10, 1907. No. 87546.

Dredging New Haven Harbor. Edwin S. Lane. Describes the modern methods of dredging used in this work, using a pump dredge, which is illustrated. 1500 w. Yale Sci M—Nov., 1906. No. 80567 C.

Sand Dredging for Commercial Purposes. Richard J. Donovan. Illustrated description of work carried out on the Mississippi River and its tributaries, showing types of dredges used. 2500 w. Eng Rec—Jan. 5, 1907. No. 81495.

Dredging the Hooghly. Illustrates a very powerful suction and discharging dredger, named Sandpiper, to be used for removing the difficulties of navigation on the river Hooghly. 800 w. Engr, Lond—Dec. 28, 1906. No. 81545 A.

See also Reclamation Work, under CONSTRUCTION.

## European.

European Practice on Waterways. D. A. Watt. Report submitted to the State Engineer of New York. Information in regard to recent and projected construction, depth of waterways, types of dams, design of locks, methods of towing, etc. 6500 w. Eng Rec—Jan. 19, 1907. No. 81720.

## Ferry Terminal.

The Staten Island Ferry Terminal. Illustrated detailed description of the terminal facilities provided for the municipal ferry between Battery Park and St. George. 3000 w. Eng Rec—June 29, 1907. No. 85322.

## Flood Prevention.

Flood Protection in Ithaca, N. Y. Describes conditions at this city on Cayuga Lake, and the means taken to confine Six Mile Creek to a safe channel. Ills. 2200 w. Eng Rec—June 8, 1907. No. 84855.

Floods and Means of Their Prevention in Our Western Rivers. T. P. Roberts. Considers the reservoir and the embankment systems and their limitations. Especially discusses conditions at Pittsburgh. 6000 w. Pro Engrs' Soc of W Penn—July, 1907. No. 86397 D.

Floods and Means of Their Prevention in Our Western Rivers. T. P. Roberts. Discussion of this paper. 17800 w. Pro Engrs' Soc of W Penn—Oct., 1907. No. 87860 D.

Flood Protection in Hungary (Der Hochwasserschutz in Ungarn). E. von Kvassay. Discusses the importance of regulating the rivers of Hungary and the works which have been undertaken for that purpose. Ills. 4400 w. Serial. 1st part. Oest Wochenschr f d Oeffent Bau-dienst—Sept. 7, 1907. No. 87642 D.

## French Canals.

Canal Transportation in France. From the report of Consul-General Robert P. Skinner covering the co-operation of State and communities in the construction of French canals, the cost, and the comparative freight charges by canals, rivers and railways. 1200 w. Eng Rec—Sept. 14, 1907. No. 87031.

## Georgian Bay Canal.

Notes on the Evolution of Canal Electrification Methods. B. H. Thwaite. A discussion of canal electrification methods, the systems tried, and related matters of interest. 1700 w. Elec Rev, Lond—Jan. 18, 1907. Serial. 1st part. No. 81985 A.

Completion of the Surveys for the Montreal, Ottawa, and Georgian Bay Ship Canal. J. A. McDonald. Information concerning this project based on the recently completed survey. 1300 w. Eng News—Oct. 3, 1907. No. 87426.

## Harbors.

Harbors and Waterways in 1906. Remarks on the struggle between shipbuilders and harbor authorities, and brief comments on conditions of the Thames, Southampton, Dover, the Mersey, Manchester Ship Canal, the Humber, the Tyne, Hartlepool, and East Coast ports, are given in the present number. 3500 w. Engr, Lond—Jan. 4, 1907. Serial. 1st part. No. 81654 A.

The Harbors of South Africa; with Special Reference to the Causes and Treatment of Sand-Bars. Cathcart William Methven. Information concerning the harbors on the Southeast African coast. Considers principally the physical features affecting these harbors, and some of the problems that arise in dealing with bars on this sandy coast. Also discussion. Ills. 29500 w. Inst of Civ Engrs—No. 3602. No. 82042 N.

The Modern Development of British Fishery Harbors. H. C. M. Austen. Discusses the importance to the United Kingdom, of the fishery harbors and the causes of their modern extension; the effect of the change in the character of the fishing vessels, and the engineering aspects of the subject generally. Map. 3300 w. Engng—Feb. 8, 1907. Serial. 1st part. No. 82465 A.

# CIVIL ENGINEERING

## Harbors

The Entrance to the Mersey. An account of improvements to be made at the Port of Liverpool for the safety and convenience of ships. 2200 w. Engng—March 15, 1907. Serial. 1st part. No. 83465 A.

The Midland Railway Company's Harbor at Heysham, Lancashire. George Neill Abernethy. A detailed description of the construction and equipment of this harbor, designed to provide increased accommodation for traffic to Ireland, and the Isle-of-Man. Plate. 4000 w. Inst of Civ Engrs—No. 3635. No. 82040 N.

Notes on Harbor Engineering. J. R. Baterden. A discussion of the effects of wave action, and other matters relating to structures in the sea. 3000 w. Engr, Lond—April 5, 1907. No. 83749 A.

The Harbor Improvements at Salina Cruz, Mexico. Illustrated notes on the terminal facilities of the Pacific terminus of the Tehuantepec National Railroad. 1300 w. Eng Rec—March 30, 1907. No. 83365.

The Contractor's Plant and Methods on the Harbor Work at Gary, Ind. An illustrated article describing the general arrangement of the harbor, its construction, etc. 3500 w. Eng Rec—Aug. 17, 1907. No. 80420.

The Canadian Waterway to the Atlantic. H. K. Wicksteed. An address before the Canadian Club, Montreal. An explanation of the project with description of the route. 4500 w. Can Engr—April 5, 1907. No. 83503.

See Bahia Blanca, Bruges, Colombo, Docks, Ferry Terminal, Mannheim, Germany, St. Nazaire, San Diego, and Seville, under WATERWAYS AND HARBORS.

## Haulage.

Electric Haulage on Canals. An outline of the evidence given by E. W. Marchant on behalf of the London Chamber of Commerce to the Royal Commission on Canals and Inland Waterways. 3500 w. Elec Engr, Lond—March 15, 1907. No. 83264 A.

Electric Haulage of Boats (Halage Electrique des Bateaux). Léon Gerard. Results of experiments on electric haulage on canals carried out by the General Electric Company in 1905, description of tractor, etc. Ill. 3300 w. L'Alliance Industrielle—April, 1907. No. 83685 D.

See Teltow, under WATERWAYS AND HARBORS.

## Havre.

The Development of the Port of Havre. Map, plans and description of the works carried out under the 1895 scheme, and the proposals for future extensions. 3000

## WATERWAYS AND HARBORS

w. Engr, Lond—Oct. 11, 1907. No. 87839 A.

## Hodbarrow Mines.

The Outer Barrier, Hodbarrow Iron Mines, Millom, Cumberland. Harry Sheldford Bidwell. Describes the conditions at these mines, and the method of dealing with very difficult work. Abstract of discussion. Plates. 26000 w. Inst of Civ Engrs—No. 3565. No. 80535 N.

## Hydrographic Surveying.

See Surveying, under MEASUREMENT.

## Levees.

Cost of Riprap Paving, Brush Mattresses and Brush Dikes for a Levee Protection. Gives data of protection work at the West Pass levee in Mississippi. 1100 w. Engng-Con—May 29, 1907. No. 84665.

Gravel Spreader Used on the Colorado River Levee Construction. H. T. Cory. Illustrates and describes a simple, cheap and efficient spreader designed by Thomas J. Hind, describing the work it accomplished. 1200 w. Eng News—July 11, 1907. No. 85570.

The Construction of the Levee Below the Recent Colorado River Break. C. W. Ozias. Describes the soil and general conditions and gives an illustrated description of the methods of levee construction. 1800 w. Eng News—May 16, 1907. No. 84389.

New Methods for Closing a Crevasse in a Mississippi River Levee: the Live Oak Crevasse, Louisiana. Mary W. Mount. The manner of effecting the closing is illustrated and described. 2200 w. Eng News—Oct. 24, 1907. No. 87873.

## Lighthouses.

See same title, under CONSTRUCTION.

## Locks.

Mechanical Canal Locks in Canada. Walter J. Francis. An illustrated detailed description of the Canadian hydraulic locks on the Trent Canal. 7000 w. Can Soc of Civ Engrs—1906. No. 82053 N.

The Kirkfield Hydraulic Lift Lock. Illustrated description of this recently completed lock on the Trent Canal, Ontario, and its operation. 2000 w. Eng Rec—March 30, 1907. No. 83370.

Piston Lifts for Ships (Ueber Kolbenhebwerke für Schiffe). Artur Budau. Description of caisson lifts used on canals. Illus. Serial. 2 parts. 5600 w. Zeitschr d Oesterr Ing u Arch Vereins—Feb. 1 and Feb. 8, 1907. No. 83614 each D.

See also Canals, under WATERWAYS AND HARBORS.

## Locks

# CIVIL ENGINEERING

Loire

WATERWAYS AND HARBORS

Panama

**Loire.**

Attempts to Regulate the River Loire (Essais d'Aménagement de la Loire). Ch. Dantin. An illustrated account of the attempts that have been made to make the Loire fit for navigation between Nantes and the confluence of the Maine. Ill. 5000 w. Génie Civil—Feb. 2, 1907. No. 82987 D.

**Madoera.**

Report on the Improvement Work at the West Opening of the Strait of Madoera (Bescheiden Betreffende de Verbetering van het Westgat van Straat Madoera). H. Wakkie. 12000 w. De Ingenieur—April 27, 1907. No. 84189 D.

**Mannheim, Germany.**

The Commercial Harbor at Mannheim (Der Industriehafen zu Mannheim). Herr Eisenlohr. Illustrated description of the harbor works at this important shipping point on the Rhine in Germany with details of the commerce handled. 3500 w. Serial. 2 parts. Deutsche Bau—June 8 and 15, 1907. No. 85639 each D.

**Mersey.**

The Mersey Channel. Illustrated description of proposed work to deepen the entrance channel. 400 w. Engr, Lond—June 14, 1907. No. 85247 A.

**Mississippi Valley.**

"Fourteen Feet Through the Valley." Harry B. Hawes. Discussing the project of constructing a 14-ft. channel from Lake Michigan through the Mississippi River to the Gulf. 4000 w. Jour Assn of Engng Soc's—Feb., 1907. No. 83041 C.

The Deep-Water Route from Chicago to the Gulf. Map and illustrations, with information and discussion of proposed improvements of the waterways of the Mississippi valley. 4000 w. Nat Geog Mag—Oct., 1907. No. 87710 C.

**Missouri.**

Improvement Work on the Missouri River (Travaux d'Amélioration du Missouri). F. Marchais. A summary of the methods which have been tried to improve navigation on the Missouri and the work now in hand. Ill. 4000 w. Génie Civil—April 6, 1907. No. 83683 D.

**Nile.**

The English on the Nile (Die Engländer am Nil). Franz Ritter. A description of the problem of regulating and utilizing the waters of the Nile and the works accomplished and in progress. 3600 w. Serial. 1st part. Zeitschr d Oest Ing u Arch Ver—Sept. 20, 1907. No. 87647 D.

**North Sea.**

The North Sea: Its Physical Characteristics, Tides and Currents. W. H. Wheeler. Map and information in regard to the dimensions, coast line, and general formation. 3500 w. Engr, Lond—May 17, 1907. No. 84582 A.

**Ohio River.**

Government Improvement of the Ohio River from End to End. One of the Most Important Undertakings Now Before Congress. Remarks on the importance of this work and the cause of the delay, describing the location of the river and the many manufactures carried on along its banks. 2500 w. Naut Gaz—Feb. 14, 1907. No. 82425.

**Panama.**

General Plan for the Construction of the Panama Canal. Gives the substance of a recent circular for the information of bidders. Gives the schedule of quantities involved in the work. 1500 w. Eng News—Nov. 8, 1906. No. 80337.

Changes in the Form of the Contract for Completing the Panama Canal. Calls attention of bidders to important changes in the contract as given in a recently issued circular by T. P. Shonts. 900 w. Eng News—Nov. 8, 1906. No. 80332.

The Panama Canal. (Over den aanleg Van het Panamakanaal door de Vereenigde staaten van Amerika). J. W. Welcker. History of the various canal schemes, and comparison of the plans for sea level or lock canal. Illus. 20000 w. De Ingenieur—Nov. 24, 1906. No. 81857 D.

Present Conditions at Panama. An illustrated article explaining the general plan of construction, and commenting on earlier work. Also editorial. 4000 w. Sci Am—Dec. 1, 1906. No. 80737.

Safeguards for the Panama Canal Locks. An outline of some of the devices that could be used for the protection of the locks. 1500 w. Sci Am—Dec. 8, 1906. No. 80879.

President Roosevelt's Special Message on the Panama Canal. Condensed from the original message transmitted to Congress Dec. 17, 1906. Ills. 5500 w. Eng News—Dec. 20, 1906. No. 81083.

Panama: The Railroad and the Canal. Fullerton L. Waldo. Information gathered during a visit from Dec. 28, 1906 to Jan. 2, 1907. Ills. 4000 w. R R Gaz—Jan. 18, 1907. No. 81687.

The Panama Canal Work, and the Workers. Fullerton L. Waldo. An interesting personal study of actual conditions on the Isthmus which gives con-

## CIVIL ENGINEERING

### Panama

fidence in the wise management of affairs. Ills. 4000 w. *Engineering Magazine*—Feb., 1907. No. 81897 B.

Progress on the Panama Canal. Fullerton L. Waldo. An illustrated account of things observed during a visit in Dec., 1906. 4000 w. *Cassier's Mag*—Feb., 1907. No. 82281 B.

Isthmian Canal. C. L. Chester. An outline of the points connected with the Panama Canal. General Discussion. 5500 w. *Pro N Y R R Club*—Jan. 18, 1907. No. 82269.

The Panama Canal—The "Lock Canal" Type and the "Straits of Panama" Type. Philippe Bunau-Varilla. An illustrated article discussing the system of construction, the lock canal, past and present works and projects, with related matters. General discussion follows. 21500 w. *Jour Soc of Arts*—Jan. 25, 1907. No. 82289 A.

The Present Status of the Panama Canal. An account of what has been accomplished, and the work in progress, the most pressing need at the Colon terminus of a system of breakwaters to provide a safe harbor. 3800 w. *Engng*—March 15, 1907. No. 83467 A.

The Isthmian Canal—A General Résumé of the Work Accomplished. F. B. Maltby. 10500 w. *Pro St Louis Ry Club*—May 10, 1907. No. 85044.

The Panama Canal and Conditions in the Canal Zone. O. L. Whitelaw. Impressions from a trip to the isthmus. Ills. 5500 w. *Pro St Louis Ry Club*—May 10, 1907. No. 85045.

The Preparatory Period, Panama Canal. Gen. Henry L. Abbot. Gives a brief summary of events since the United States obtained control, and discusses matters of technical interest having a bearing upon the project. 3500 w. *Harvard Engng Jour*—June, 1907. No. 85191 D.

### Parana.

Ship Canal from Buenos Ayres to the Paraná de Las Palmas (Canal Marítimo de Buenos Aires al Paraná de Las Palmas). Julio B. Figuerva. The first part of the serial outlines the nature of the project and discusses the problems to be solved. Ill. Serial. 1st part. 4500 w. *La Ingenieria*—Jan. 30, 1907. No. 83995 D.

The Artificial Canalization of the Rio de la Plata (Canalización Artificial del Rio de la Plata). Augustin Mercau. A discussion of the project for a ship canal from Buenos Ayres to Paraná de las Palmas, giving costs, etc. Plate. 11000 w. *Anal Sociedad Cien Argen*—Dec., 1906. No. 84932 F.

### WATERWAYS AND HARBORS

### Rotterdam

#### Passaic Control.

Flood Control and Conservation of Water Applied to Passaic River. Morris R. Sherrerd. Gives an outline of the possibilities for controlling this river of New Jersey, based on investigations recently made. 2500 w. *Eng Rec*—Dec. 1, 1906. No. 80820.

#### Piers.

Cement Piers. Illustrates and describes the cement cylinder piers used for dock construction at San Francisco, and on the Pacific coast, stating the methods of construction. 600 w. *Sci Am Sup*—May 25, 1907. No. 84550.

The Collapse of the Locust Point Pier, Baltimore. An illustrated account of the collapse of a pier in an advanced stage of construction. 1200 w. *Eng Rec*—May 11, 1907. No. 84319.

The Locust Point Pier Collapse in Baltimore. Photographs of the wrecked pier with an explanation of the probable cause of the collapse. 600 w. *Eng News*—Aug. 8, 1907. No. 86307.

New Ferro-Concrete Jetty and Coal Tip at Port Talbot. An illustrated description of a new high-level coal tip, and the ferro-concrete jetty. 2000 w. *Col Guard*—July 19, 1907. No. 85990 A.

See also Cofferdams, Concrete, and Reinforced Concrete, under CONSTRUCTION; and Terminal, under WATERWAYS AND HARBORS.

#### Rhine.

Rectification of the Rhine and the Cut at Diepoldsau (Die Rheinkorrektion und der Diepoldsauer Durchstich). Detailed description of improvement works on the lower stretches of the Rhine. Illus. Serial. 3 parts. 5800 w. *Schweizerische Bauzeitung*—Jan. 5, Jan. 12, and Jan. 19, 1907. No. 83619 each B.

#### River Channels.

Treatment of Rivers with Shifting Channels. Reviews the German and French methods of dealing with rivers of this class, describing work on the Rhone and the Loire. 2000 w. *Engr, Lond*—Nov. 2, 1906. No. 80362 A.

#### Rotterdam.

The Quays at Rotterdam (De Kaai-muurbouw te Rotterdam). H. A. Van Ysselsteyn. Illustrates and describes the various works for the protection of Rotterdam harbor within the last twenty years, with particular reference to some important works now under construction. Ills. 13000 w. *De Ingenieur*—July 20, 1907. No. 86280 D.

## CIVIL ENGINEERING

### Royal Commission

### WATERWAYS AND HARBORS

### U. S. Waterways

#### Royal Commission.

Royal Commission on Canals and Waterways. Describes the work of the Commission appointed to inquire into the canals and inland navigations of the United Kingdom and report their present condition and financial position, and matters relating to their improvement and extensions. 3000 w. Engng—Nov. 2, 1906. Serial. 1st part. No. 80355 A.

#### San Diego.

The Harbor of San Diego, California. Clarence E. Edwards. Information and illustrated description of this fine harbor on the Pacific Coast. 1400 w. Marine Rev—Dec. 20, 1906. No. 81219.

#### Seville.

The Port of Seville. Mateo Clark. Reviews the history of this port and improvements made in the Guadalquivir River between Seville and the ocean, describing proposed new works. 2000 w. Engng—June 14, 1907. No. 85245 A.

#### Sounding.

See same title, under MEASUREMENT.

#### Spurdikes.

Bank Protection on the Lower Mississippi by Means of Spurdikes (Uferbefestigung am Unteren Mississippi mit Spurdikes). A. v. Horn. Illustrated description of cribwork sunk at right angles to bank. 1 plate. 600 w. Oest Wochenschr f d Oeff Baudienst—Oct. 27, 1906. No. 80614 D.

#### St. Nazaire.

The New Entrance to the Port of St. Nazaire (La Nouvelle Entrée du Port de Saint Nazaire). E. Aragon. Well illustrated description of harbor at the mouth of the Loire, with tide lock, inner and outer basins, bridges, etc. 2 Plates. Serial. 2 parts. 6000 w. Génie Civil—Oct. 20 and 27, 1906. No. 80626 each D.

#### Teltow.

Electric Installations on the Teltow Canal (Les Installations Electrique du Canal de Teltow). Georges Dary. This first article of the series describes the Canal, the country through which it passes and especially the locks. Ill. Serial. 1st part. 1800 w. L'Elec—Feb. 16, 1907. No. 82996 D.

The Electrical Equipment of the Teltow Canal. Brief illustrated description. 1500 w. Elec Rev, Lond—April 19, 1907. No. 83991 A.

The Teltow Canal (Verein für Eisenbahnkunde zu Berlin—Ueber den Teltowkanal). Havestadt. Paper presented to

the Berlin Railway Club; a complete account of the canal. Illus. 5600 w. Glasers Annalen—March 15, 1907. No. 83624 D

#### Tennessee River.

Water-Power: By-Product of Navigation Improvement. Charles H. Baker. An account of the improvement of the Tennessee River and the project for the establishment of navigation over shoals and the development of water-power in connection. Ills. 3000 w. Mfrs' Rec—Oct. 10, 1907. No. 87533.

#### Teredo.

The Teredo in South Africa. Data concerning the methods used to meet the difficulty, due to ravages of the teredo, along the coast. Also discussion. 5000 w. R R Gaz—Feb. 1, 1907. No. 82082.

#### Terminal.

Steamship Terminal with Concrete Pile Piers at Brunswick, Ga.; Atlantic & Birmingham Ry. An illustrated detailed description of the plans for the new water and rail terminals which provide for 5 freight or steamship piers, a coal pier, a lumber yard, freight sheds and other structures. 1600 w. Eng News—Dec. 20, 1906. No. 81081.

#### Tiber.

Improvement Work on the Tiber (I Lavori del Tevere). G. Como. A description of the work to improve navigation on the Tiber and to protect its banks. Map. 6000 w. Rivista Marittima—Feb., 1907. No. 82979 E + F.

#### Transalpine Waterway.

A Transalpine Waterway (Eine Transalpine Wasserstrasse)? Jos. Riedel. Reviews the history of the project for a waterway through the Alps and examines its feasibility. 4000 w. Oest Wochenschr f d Oeffent Baudienst—Aug. 10, 1907. No. 86968 D.

#### U. S. Waterways.

President Roosevelt on Improvement of National Waterways. Extracts from address at Memphis, with editorial. 4500 w. Eng News—Oct. 10, 1907. No. 87553.

A Plea for the Development of the Waterways. Hon. Joseph E. Ransdell. Address delivered before the Upper Mississippi Improvement Association. 7000 w. Marine Rev—March 21, 1907. No. 83209.

Protected Waterway from Boston to the Gulf. Hon. John H. Small. Discusses the movement for the construction by the United States of inland waterways extending from New England along the



## CIVIL ENGINEERING

### Waterways Commission

entire Atlantic seaboard to the Gulf of Mexico. 3500 w. Mfrs' Rec—March 21, 1907. No. 83207.

### Waterways Commission.

The Work of the International Waterways Commission. J. A. Macdonald. Information concerning cases dealt with affecting waters on the boundary between the United States and Canada, and the spirit of fairness shown. 1500 w. Eng News—Dec. 13, 1906. No. 80970.

### Wave Motion.

Progressive and Stationary Waves in Rivers. Vaughan Cornish. The present number considers progressive waves in rivers caused by added water, such as

### MISCELLANY

flood waves, tidal bores, etc. 6800 w. Engng—July 26, 1907. Serial. 1st part. No. 86182 A.

### Wharves.

Ferro-Concrete Wharf at Hornchurch, Essex. Illustrates and describes a new wharf built entirely of Hennebique ferro-concrete. 600 w. Engng—Jan. 11, 1907. No. 81747 A.

Ferro-Concrete Coal Wharf at Rochester. Illustrated description of an extensive coal wharf in course of construction in England, as a typical illustration of the application of ferro-concrete to wharf design. 3000 w. Engng—Nov. 16, 1906. No. 80726 A.

## MISCELLANY

### Asbestos Wood.

New Fire Retardant. Prof. Charles L. Norton. Describes tests made of asbestos wood, a non-inflammable material that can be worked with ordinary tools. Ills. 2200 w. Ins Engng—April, 1907. No. 83957 C.

### Caisson Disease.

Caisson-Disease at the New High-Level Bridge, Newcastle-on-Tyne. George Walter Morgan Boycott. Explains the cause of the disease, the conditions at Newcastle and the medical lock provided. 2000 w. Inst of Civ Engrs—No. 3609. No. 80541 N.

Compressed Air Illness or Caisson Disease. Abstract translation of a lecture by Thomas Oliver, giving a physiological and clinical study of the effects of work in compressed air. 3000 w. Compressed Air—Feb., 1907. No. 82494.

### Channel Tunnel.

The Project for a Railway-Tunnel Connection between England and France under the English Channel (Das Projekt der Eisenbahn-Tunnelverbindung zwischen England und Frankreich unter dem Canal la Manche). E. A. Ziffer. Outlines the various projects which have been put forward and describes the tunnel recently suggested. Ills. 5000 w. Mitt d Ver f d Förd d Lokal u Strassenbahnwesens—Aug., 1907. No. 86930 F.

Channel Tunnels, Bridges and Ferries. Reviews the various projects for constructing a tunnel under the Straits of Dover, for the laying of submerged tubes and roadways for ferries carrying the trains, and for bridges across the Chan-

nel. Also editorial. 5000 w. Engr, Lond—March 22, 1907. No. 83427 A.

### Computing.

On Computing. Russell Tracy Crawford. Presents practical suggestions, some of which have not previously appeared. 3500 w. Cal Jour of Tech—Oct., 1907. No. 87982.

### Dam.

The San Roque Dam (Dique de San Roque). Daniel E. Gavier. Report of an investigation of the condition of stability of this dam in the Argentine Republic. Ill. 4500 w. Serial. 1st part. La Ingenieria—Feb. 28, 1907. No. 83996 D.

### Drainage.

Drainage of Bottom Lands Along the Mississippi and Missouri Rivers. Gives abstracts of two papers read at meeting of the Illinois Society of Engineers and Surveyors. I. The Sny Island Levee Drainage District, by W. P. Bushnell. II. The Barton East Drainage System, Nebraska, by L. G. Hicks. 3000 w. Eng News—March 14, 1907. No. 83133.

### Earth Slip.

Earth Slip at the Viaduct of the Gor, Spain (Glissement de Terrain au Viaduc du Gor, Espagne). Arsène Portier. A description of the causes and effects of earth-slip under one of the abutments of a bridge between Grenada and Murcie, Spain. Ill. 4000 w. Mem. d. l. Soc. d. Ing. Civ. l. France—March, 1907. No. 84104 G.

### Engineering.

Presidential Address of Sir Alexander B. W. Kennedy. On the engineer, his

## CIVIL ENGINEERING

### Engineering

relation to science, art, nature, law, commercial, professional and industrial life, etc. 11000 w. *Inst of Civ Engrs*—Nov. 6, 1906. No. 84470 N.

President's Address before the North-East Coast Institution of Engineers and Shipbuilders. W. H. Dugdale. An interesting summary of engineering from the earliest times, showing the value of scientific and technical institutions. 8500 w. *Trans N-E Coast Inst of Engrs & Shipbldrs*—Jan., 1907. No. 82822 N.

Professional Ideals of the Twentieth Century. Address of President Hadley of Yale University at the dedication of the Engineering Societies Building in New York. 3000 w. *Eng Rec*—April 20, 1907. No. 83834.

### Hauling Crops.

Costs of Hauling Crops from Farms to Shipping Points. Frank Andrews. Condensed from Bul. 49, Bureau of Statistics, U. S. Dept. of Agri. Information obtained through inquiries sent out. Editorial discussion. 4800 w. *Eng News*—April 18, 1907. No. 83892.

### Lettering.

An Improved System of Lettering Maps and Drawings. Henri V. Lemenager. A brief description of a system of type-printed lettering, which has been in successful use in the drafting section of the Reclamation Service. 900 w. *Eng News*—July 18, 1907. No. 85737.

### New Orleans.

A Study of the Effect of New Orleans Canal Waters on Crab Life. R. M. Redding. Gives results of a study of the cause for an abnormal mortality among the fish and crabs of Lake Ponchartrain, concluding that it was due to the absence of free oxygen in the water, brought about by the waters being heavily charged with organic matter. 1400 w. *Jour Assn of Engng Soc*s—Dec., 1906. No. 81909 C.

### Rainfall.

Salton Sea and the Rainfall of the Southwest. Alfred J. Henry. An examination of the conditions showing it to be very doubtful that any local evaporation increases the rainfall. 2200 w. *Nat Geog Mag*—April, 1907. No. 83854 C.

### Reclamation.

Reclaiming the Swamp Lands of the

### MISCELLANY

United States. Herbert M. Wilson. An interesting account of the many swamps in the United States, what has been done in draining them, and work proposed. Ills. 4000 w. *Nat Geog Mag*—May, 1907. No. 84455 C.

Work of the United States Reclamation Service. F. H. Newell. Explains the provisions of the Reclamation Act and gives an illustrated account of the work in progress. 3500 w. *Jour Fr Inst*—July, 1907. No. 85702 D.

### Reviews.

Civil Engineering. Brief reviews of conditions in Canada, Australia, New Zealand, Africa, Abyssinia, India, China, Thibet, the United States, Mexico, South America, Russia, Turkey, Italy, France, Germany, London's Main Lines, bridges and tunnels. 6800 w. *Engr, Lond*—Jan. 4, 1907. No. 81659 A.

Engineering in the United States in 1906. Reviews some of the main directions of development, and some of the principal enterprises in which progress has been made during the year. 4000 w. *Engr, Lond*—Jan. 11, 1907. Serial. 1st part. No. 81751 A.

### Salaries.

The Compensation of Engineers. J. D. Blackwell. Abstract of Presidential address before the Pacific Soc. of Eng. 1000 w. *Eng News*—Feb. 7, 1907. No. 82399.

### Stresses.

Further Note on Summation of Stresses in Certain Structures. John C. Trautwine, Jr. Briefly reviews arguments in a paper by Mr. Carl Hering on this subject, and gives an elaboration leading to a more complete generalization. Discussion. 6500 w. *Pro Engrs' Club of Phila*—Jan. 1907. No. 82551 D.

### Wagon.

Strength Tests of a Contractor's Dumping Wagon. Summary abstract of a report of tests made by Prof. W. K. Hatt, at Purdue University, of a special type of dumping wagon. Ills. 1000 w. *Eng News*—Sept. 19, 1907. No. 87115.

### Wind Stresses.

Wind Reactions in Mill-Building Frames. C. H. Wood. Aims to put the formulæ of Prof. Sondericker in such simple shape that they can be more easily applied in practical design. 900 w. *Eng News*—July 18, 1907. No. 85735.

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### Arcophone

#### Arcophone.

How to Construct a Speaking Arc. A. Frederick Collins. Description and diagrams with explanation of the theory and of some of the applications. 2000 w. Sci Am Sup—April 27, 1907. No. 83915.

#### Cables.

Aerial Cable Construction for Telephone Exchanges. C. W. Burkett. Outlines practice in aerial cable construction for telephone exchanges. 3500 w. Wis Engr—Dec., 1906. No. 81275 D.

Aerial Cable Construction for Telephone Exchanges. C. W. Burkett. An illustrated article discussing the practical and technical details. 3500 w. Cassier's Mag—July, 1907. No. 85711 B.

The First Atlantic Cable. John Mulhally. An account of the first Atlantic telegraph expeditions from the pen of an eye-witness, who was personally connected with the work. 2500 w. Jour Fr Inst—Feb., 1907. Serial 1st part. No. 82063 D.

Steno-Telegraphy. A descriptive account of a new development intended to effect a degree of economy and efficiency in submarine cable transmission. 2500 w. Elect'n, Lond—May 10, 1907. No. 84439 A.

The Pupin Telephone Cable Across Lake Constance. Gives an account of the difficulties experienced in manufacturing and laying a cable with Pupin coils, and compares the results with ordinary telephone cables. 3000 w. Elect'n, Lond—May 24, 1907. No. 84753 A.

The Laying of the Telephone Cable with Self-Induction Coils on the Pupin System in the Bodensee (Ueber das im Bodensee Verlegte Fernsprechkabel mit Selbstinduktionsspulen nach dem Pupin-schen System). Dr. Ebeling. Illustrates and describes the cable, its laying and the results obtained. 4000 w. Elektrotech Zeitschr—July 4, 1907. No. 86278 D.

### COMMUNICATION

### Oscillations

The Pupin Telephone Cable of the Lake of Constance. Editorial on some of the difficulties encountered in submarine telephony, and means of overcoming them, giving an account of the work of laying the Pupin cables in the Lake of Constance. 2000 w. Engng—July 19, 1907. No. 85996 A.

#### Dictating Machine.

Telephone Dictating Apparatus. Describes a recently invented telephone dictating machine by which a person may dictate to any one of his stenographers without requiring them to leave their desk. Ills. 1200 w. Sci Am Sup—May 11, 1907. No. 84330.

#### Electric Waves.

The Silicon Detector, and Measurement of Electric Wave Energy. William Meaver, Jr. Describes the Pickard detector, which is of the thermo-electric type of wireless receivers, and tests made with it. 900 w. Sci Am Sup—May 25, 1907. No. 84547.

The Propagation of Electric Waves. A critical statement of the difficulties a student encounters in endeavoring to study the phenomena of wireless telegraphy, especially referring to the detachment of the electric lines of force from the oscillator and their propagation into space. Gives the writer's way of explaining the subject. 4800 w. Elec Rev, Lond—Aug. 2, 1907. No. 86359 A.

#### Microphone.

A New Compensating Microphone. Illustrates and describes the construction and states the advantages claimed. 1800 w. Elec Engr, Lond—Feb. 1, 1907. No. 82241 A.

#### Oscillations.

Note on an Oscillographic Study of Low-Frequency Oscillating Arcs. J. T. Morris. Read before the British Assn.

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## Oscillations

Gives observations made on direct and alternating current arcs, chiefly with the object of studying the effect of a change in the medium in which the arc is burning, and also to examine the effect on the arc of a transverse magnetic field. Diagrams. 1500 w. Elec Rev, Lond—Aug. 9, 1907. No. 86459 A.

On the Discharge of Condensers Charged by Transformers, and on the Regulation of Resonance Transformers. A. Blondel. Abstract from *L'Eclairage Electrique*. Considers the working of transformers used for the production of oscillations, and investigates the conditions determining the nature of the secondary discharges. 900 w. Elect'n, Lond—Aug. 2, 1907. No. 86363 A.

The Production of High-Frequency Oscillations from the Electric Arc. L. W. Austin. Abstract from *Bul. of Bureau of Standards*. Gives a short account of the work accomplished in this field, describing the apparatus used by the author in his experimental investigations. 4000 w. Elect'n, Lond—Aug. 2, 1907. No. 86362 A.

On the Elementary Theory of Electric Oscillators. J. A. Fleming. An explanation of the theory of the oscillator for a few of the simple and most practically important forms of open and closed radiating circuit. 3500 w. Elect'n, Lond—Sept. 27, 1907. Serial. 1st part. No. 87514 A.

## Poles.

The Sterilization and Preservation of Telephone and Telegraph Poles. H. P. Folsom. Abstract of an address before the Ohio Ind. Tel. Assn. Gives an estimate of the number of poles used in the United States, and their value, discussing the cause of decay and the remedy. 1500 w. Elec Rev, N Y—May 4, 1907. No. 84097.

Experiments with Concrete Telegraph Poles. G. A. Cellar. Gives results of tests made by the Pennsylvania Lines west of Pittsburg. Ills. 700 w. Elec Wld—June 29, 1907. No. 85350.

## Printing Telegraphs.

Keyboard Page-Printing Telegraphs. Romya Hitchcock. Discusses the advantages claimed for typewriter keyboard printers, considering especially the Rowland multiplex printing telegraph and the telegraphic typewriter invented by J. E. Wright. 2500 w. Elec Rev, N Y—June 1, 1907. No. 84716.

## Radio-Telegraphy.

Apparatus for Protecting Radio-Telegraphic Apparatus from the Influence of Electric Discharges (*Appareil de Sécurité Contre les Etincelles Accidentales dans*

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*les effets de Télémechanique sans Fil*). Edouard Branly. Description of automatic circuit breaker. 8000 w. Comptes Rendus—Oct. 22, 1906. No. 80641 D.

The Large Radio-Telegraphic Station at Nauen (Die Funkentelegraphische Grossstation Nauen). Hr. Siewert. Illustrated description of a powerful station near Berlin with tower 330 feet high, on the "telefunken" system. 1500 w. Elektrotech Zeitschr—Oct. 18, 1906. No. 80651 B.

The High-Power Wireless Telegraph Station at Nauen, Near Berlin. Illustrates and describes a long-range station working on the "Telefunken" system. 1500 w. Elect'n, Lond—Nov. 2, 1906. No. 80354 A.

A "Wireless" Station for Long-Distance Communication. Illustrated description of an important installation at Nauen, Germany, having several novel features. 1000 w. Elec Rev, Lond—Nov. 16, 1906. No. 80716 A.

The Tuning of Radio-Telegraphic Transmitters (Ueber die Abstimmung Funkentelegraphischer Sender). A. Slaby. The closing instalment of a discussion with Max Wien. 3000 w. Elektrotech Zeitschr—Oct. 18, 1906. No. 80653 B.

The Development of Wireless Telegraphy (Die Entwicklung der Drahtlosen Telegraphie). Dr. Adolf Franke. Address before the Elektrotechnische Verein, giving an illustrated general review and account of present state of art. 5000 w. Elektrotech Zeitschr—Oct. 25, 1906. No. 80656 B.

Departures from Ohm's Law, Rectifying Action and Wave Detectors in Wireless Telegraphy (Ueber Abweichungen vom Ohmschen Gesetz Gleichrichter-Wirkung und Wellenanzeiger der Drahtlosen Telegraphie). H. Brandes. Discussion of conductors which do not obey Ohm's law, and which on account of their current-rectifying effect can serve as wave detectors. Diagrams and formulas. 2000 w. Elektrotech Zeitschr—Nov. 1, 1906. No. 80658 B.

A Method for the Production of Undamped Electrical Oscillations and its Application in Wireless Telegraphy (Ein Verfahren zur Erzeugung Ungedämpfter Elektrischer Schwingungen und Seine Anwendung in der Drahtlosen Telegraphie). Valdemar Poulsen. Address giving an illustrated description of transmitter with an electric arc in a hydrogen atmosphere. 3000 w. Elektrotech Zeitschr—Nov. 8, 1906. No. 80663 B.

Wireless Telegraphy by Means of Undamped Oscillations. Valdemar Poul-

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sen. Abstract of a lecture before the Elektrotechnische Verein. An account of an interesting system of producing undamped oscillations, with W. D. Duddell's researches on the "singing arc" as a basis. 1200 w. Elec Rev, Lond—Nov. 16, 1906. No. 80715 A.

Communications on Wireless Telegraphy. J. Hettinger. Brief explanation of a receiving arrangement for utilizing the energy induced by the two waves of coupled transmitters. 300 w. Elec Engr, Lond—Oct. 26, 1906. No. 80302 A.

The Carborundum Wireless Detector. Greenleaf W. Pickard. Description of a detector, consisting essentially of a c-r-borundum fragment, and of its mode of operation. Developed by Gen H. H. C. Dunwoody. 900 w. Elec Wld—Nov. 24, 1906. No. 80589.

A Protective Device Against Accidental Sparking in Wireless Tele-Mechanisms. E. Branly. Describes the device and its use. 1000 w. Elect'n Lond—Dec. 7, 1906. No. 81013 A.

The Generation and Use of Undamped High-Frequency Oscillations in Radio-Telegraphy (Ueber die Erzeugung und Verwendung Ungedämpfter Hochfrequenz Schwingungen in der Drahtlosen Nachrichten Uebertragung). W. Hahne-mann. An illustrated description of an arc transmitter with large hollow copper anode filled with water, for cooling, and carbon cathode. Also discussion of relative advantages of undamped and damped oscillations. 1800 w. Elektrotech Zeitschr—Nov. 22, 1906. No. 81157 B.

Radio-Telegraphy and the Telefunken System. Describing the Telefunken system of the Gessellschaft für Drahtlose Telegraphie, of Berlin. Diagrams. 3500 w. Engng—Dec., 14, 1905. Serial. 1st part. No. 81246 A.

Recent Methods in Wireless Telegraphy. T. C. McKay. Describes new detectors which have aided the advance in wireless telegraphy, and explains the general arrangement for sending and receiving currents. Diagrams. 4000 w. Cal Jour of Tech—Dec., 1906. No. 81204.

The Poulsen Selection System of Wireless Telegraphy. A. Frederick Collins. Information concerning a new system which employs an arc transmitter. Ills. 1800 w. Sci Am—Dec. 15, 1906. No. 80076.

Wireless Telegraphy as a Safeguard in Railway Service. Dr. Eugen Nesper. Abstract translation from *Elektrotechnische Zeitschrift*. An account of experiments made in Germany. 900 w. Elect'n, Lond—Dec. 7, 1906. No. 81012 A.

On a Method of Producing Continuous High-Frequency Electric Oscillations. S. G. Brown. Describes briefly methods employed by the writer for the continuous production of high-frequency oscillations, in wireless telegraphy. 800 w. Elect'n, Lond—Nov. 23, 1906. No. 80829 A.

The Measurement of Received Energy at Wireless Stations. Greenleaf W. Pickard. Explains a simple method developed by the writer for measuring the energy received at each discharge of the distant station, the only limitation being the sensitiveness of the detector employed. 1300 w. Elec Rev N Y—Dec. 15, 1906. No. 80983.

The Influence of the "Counterbalance" on the Damping of the Aerial in Radio-Telegraphy (Ueber den Einfluss des Gegengewichtes auf die Dämpfung des Luftdrahtes in der Drahtlosen Telegraphie). Dr. Walther Burstyn. Mathematical discussion of the influence of a capacity at the lower end of an aerial which is not grounded. 1000 w. Elektrotech Zeitschr—Nov. 29, 1905. No. 81162 B.

The Wireless Telegraph Conference. An authoritative account of the work at the recently concluded conference at Berlin. 1500 w. Elec Rev, Lond—Nov. 16, 1906. No. 80717 A.

On the Electric Radiation from Bent Antennae. J. A. Fleming. Abstract of a paper before the Physical Society. Describes experiments, with such antennae. 2500 w. Elect'n, Lond—Dec. 28, 1906. No. 81529 A.

The Lodge-Muirhead System of Wireless Telegraphy. C. C. A. Hardie. An explanation of this system, with diagrams. 1200 w. Elec Engr, Lond—Jan. 4, 1907. No. 81635 A.

The New Wireless Telegraph Station at Nauen, Germany. L. Ramakers. Illustrated detailed description of a great advance in construction and equipment of such stations with report of some of the remarkable results already obtained. 1000 w. Sci Am Sup—Jan. 26, 1907. No. 81933.

The Use of Wireless Telegraphy for Determining Longitude. A brief account of experiments made in Germany to test a possible application of wireless telegraphy to the determination of longitude. The conclusions were that this method is fully able to replace ordinary telegraphy for the practical determination of longitude. 800 w. Sci Am—Jan. 26, 1907. No. 81929.

Portable Wireless Outfits for U. S. Signal Corps. C. H. Cloudy. Illustrated

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detailed description of a field wireless set. 800 w. Elec Wld—Feb. 16, 1907. No. 82432.

Radio-Telegraph Installation for Signalling Across the Wash. Illustrates and describes an installation for signalling over a distance of 16 miles across the Wash, between Hunstanton and Skegness. 1200 w. Elec Rev, Lond—Feb. 8, 1907. No. 82455 A.

The Making and Using of a Wireless Telegraph Tuning Device. A. Frederick Collins. The fourth of a series of articles dealing with a 100-mile wireless telegraph set. Ills. 1600 w. Sci Am Sup—Feb. 16, 1907. No. 82424.

The Installation and Adjustment of a 100-Mile Wireless Telegraph Set. A. Frederick Collins. The third of a series of articles on related topics. Describes the installation, giving plan of arrangement of apparatus. Ills. 2200 w. Sci Am Sup—Feb. 9, 1907. No. 82178.

The Location and Erection of a 100-Mile Wireless Telegraph Station. A. Frederick Collins. Gives data relating to the location and erection of a station, using the instruments described in an earlier article. Ills. 2500 w. Sci Am Sup—Feb. 2, 1907. No. 82088.

The Theory and Action of a 100-Mile Wireless Telegraph Set. A. Frederick Collins. The fifth of a series of related articles explaining the theory and working of the instruments employed. Diagrams. 2500 w. Sci Am Sup—Feb. 23, 1907. No. 82583.

Trans-Atlantic Wireless Telegraphy. Illustrates and describes the construction of the tower at Machrihanish, N. B., for Trans-Atlantic service. This tower was blown down by a storm and the cause of the disaster is explained and details described. 1600 w. Engng—Jan. 25, 1907. No. 82153 A.

The Management and Operation of Ship and Shore Wireless Telegraph Stations. A. Frederick Collins. The sixth of a series of articles dealing with the design, construction and operation of a 100-mile wireless telegraph. 2200 w. Sci Am Sup—March 16, 1907. No. 83021.

Recent Practice in Wireless Station Construction. G. H. Barbour. Illustrates and describes various designs of stations for wireless work, especially the masts and their erection. 3500 w. Elec Wld—March 2, 1907. No. 82773.

Controlling Torpedoes by Wireless Telegraphy. Describes a torpedo launching apparatus, operated by electric waves, which has recently been tried in France.

Diagrams. 1000 w. Sci Am—March 23, 1907. No. 83151.

Wireless Telegraphy Between New-haven and Dieppe. Explains conditions which made the establishment of a wireless station desirable, and gives an illustrated description of the station and its equipment. 2000 w. Engng—March 8, 1907. No. 83117 A.

Carborundum and Silicon Detectors for Wireless Telegraphy. A. Frederick Collins. Describes detectors recently brought out by Gen. H. H. C. Dunwoody, and by Pickard. 900 w. Sci Am—March 16, 1907. No. 83019.

Wireless Telegraph Receivers. S. M. Kintner. Discussing improvements made in detectors, especially commending the liquid barretter and its various modifications. 1800 w. Pro Am Inst of Elec Engrs—Jan., 1907. No. 83024 D.

Arrangement of Wireless Telegraph Apparatus. D. McNicol. Gives a diagram and description of an arrangement explaining its merits. 700 w. Elec Wld—April 6, 1907. No. 83496.

A Military Wireless Telegraph Equipment. A. Frederick Collins. Illustrates and describes the various kinds of field equipment and the arrangements for transporting it. 1200 w. Sci Am—May 4, 1907. No. 84080.

A New Government Portable Wireless Telegraph Apparatus. R. H. White. Illustrated detailed description of an outfit that can be carried on the backs of three mules. 2000 w. Elec Rev, N Y—May 25, 1907. No. 84606.

Automatic Calling Device for a Wireless Telegraph System. W. R. Carroll. Describes the equipment of the station at Yerba Buena Island, San Francisco Bay, especially the auto-sender and its operation. 1000 w. Elec Wld—May 25, 1907. No. 84610.

An Ungrounded, Closed Circuit for Receiving Wireless Signals. Greenleaf W. Pickard. Describes an interesting system, giving some details of the method of adjusting it and some results of tests. 1200 w. Elec Rev, N Y—June 15, 1907. No. 85069.

Recent Contributions to Electric Wave Telegraphy. Prof. J. A. Fleming. Presented before the Roy. Inst. of Gt. Britain. The present number considers effects of electric wave telegraphy which can be measured. 3000 w. Elect'n, Lond—May 31, 1907. Serial. 1st part. No. 84887 A.

Recent Developments in Wireless Telegraphy. Dr. Lee de Forest. A brief

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review of the rapid development of this science, recent advances and problems yet to be solved. 3500 w. Jour Fr Inst—June, 1907. No. 85139 D.

The Commercial Future of Wireless Telegraphy. E. Millian Trinks. Considers in detail the factors affecting the ultimate commercial value. 1200 w. Elec Rev, N Y—June 1, 1907. No. 84714.

Wireless Telegraphy—Some of Its Practical and Commercial Aspects. William Maver, Jr. Read at the convention of the Assn. of Ry. Tel. Supts. The present service of wireless telegraphy, recent improvements, and the limitations of the system are discussed. 3000 w. Elec Rev, N Y—July 13, 1907. No. 85534.

Wireless Telegraphy: A Solution of the Problem of Selectivity. I. Hettinger. Abstract of a specification of a British patent recently granted the writer for a method of selective wireless telegraphy wherein the selectivity is secured independently of the magnitude of the power and distance of transmission of the interfering station. 2000 w. Elec Engr, Lond—June 21, 1907. No. 85381 A.

Spark Telegraphy (Die Funkentelegraphie). A. Linker. A review of the theory and development of radiotelegraphy, discussing the work of the leading investigators. Ills. 3000 w. Serial. 2 parts. Eisenbahntech Zeitschr—June 12 and 26, 1907. No. 85665 each D.

Hot-Wire Relay for Selective Signaling. Richard Heilbrun. Describes a retardation relay, the essential part of which is a hot wire. 1000 w. Elec Rev, Lond—Aug. 9, 1907. No. 86460 A.

Note on Tuning in Wireless Telegraphy. Sir Oliver Lodge. Read before the British Assn. Suggestions for sending and receiving at tuned stations, describing a system which eliminates the influence of the earth. 1200 w. Elec Engr, Lond—Aug. 9, 1907. No. 86457 A.

The Arc and Spark in Radiotelegraphy. W. Duddell. Discourse before the British Assn. An explanation and discussion of methods of producing Hertzian waves for wireless telegraphy, and their application and development. 5500 w. Elec Engr, Lond—Aug. 9, 1907. No. 86458 A.

Atmospheric Absorption of Wireless Signals. R. A. Fessenden. Reports results of some experiments recently made. 600 w. Elec Rev, Lond—Sept. 6, 1907. No. 87058 A.

Radio-Telegraphic Convention. Extracts from the report of the Select Committee of the House of Commons on the progress thus far. 2000 w. Elec Engr,

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Lond—Sept. 6, 1907. Serial. 1st part. No. 87055 A.

The Radio-Telegraphic Station at Nauen, Germany. Illustrated detailed description of an interesting station on the Telefunken system. 2000 w. Elec Rev, N Y—Sept. 7, 1907. No. 86784.

Wireless Telegraphy (La Télégraphie sans Fil). P. Janet. A discussion of the scientific principles on which wireless telegraphy is based. Ills. 6000 w. Mem Soc Ing Civ de France—June, 1907. No. 86909 G.

Wireless Telegraphy and its Most Recent Advances (Die Drahtlose Telegraphie und ihre Jüngsten Fortschritte). Otto Nairz. A brief review of the development of wireless telegraphy, particularly describing the recent advances made in Poulsen's researches. Ill. 4000 w. Serial. 2 parts. Verkehrstech Woche u Eisenbahntech Zeitschr—Aug. 3 and 10, 1907. No. 86949 each D.

See also Electric Waves and Oscillations, under COMMUNICATION; and also under ELECTRO-PHYSICS.

## Radio-Telephony.

Experiments with Radio-Telephony. (Versuche mit Elektrischem Fernsprechen ohne Draht). Ernst Ruhmer. Illustrated description of experiments using an arc transmitter and electrolytic receiver. 800 w. Elektrotech Zeitschr—Nov. 15, 1906. No. 80666 B.

Recent Progress in Wireless Telephony. Reginald A. Fessenden. An illustrated description of apparatus used, and an account of what has been accomplished in this field. 600 w. Sci Am—Jan. 19, 1907. No. 81689.

Wireless Telephony. R. A. Fessenden. Briefly discusses the present status, and future prospects, and begins a review of the developments. Ills. 2000 w. Elec Rev, Lond—Feb. 15, 1907. Serial. 1st part. No. 82600 A.

The Continuous Production of High-Frequency Oscillations. R. A. Fessenden. Gives a short historical résumé dealing principally with arc methods used by the writer for producing high-frequency oscillations, and their application to wireless telephony. 2800 w. Elect'n, Lond—Feb. 15, 1907. Serial. 1st part. No. 82603 A.

How to Construct a Simple Wireless Telephone. A. Frederick Collins. Illustrates and describes a construction that will give results up to 30 or 40 feet and operate through ordinary walls. An application of electro-magnetic induction. 2000 w. Sci Am Sup—July 20, 1907. No. 85742.

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## Sound

Wireless Telephony for the United States Navy. Herbert T. Wade. Explains the construction and operation of the De Forrest system, illustrating the instruments. 1600 w. Sci Am—Sept. 28, 1907. No. 87252.

Long Distance Wireless Telephony. R. A. Fessenden. An account of the system in operation between Brant Rock and New York—nearly 200 miles—discussing the possibilities. Ills. 2200 w. Elect'n, Lond—Oct. 4, 1907. No. 87590 A.

## Sound.

Some Observations on Sound. George Sherwood Hodgins. A study of the degree of loudness and pitch of tones produced both mechanically and electrically. 2300 w. Ry & Loc Engng—June, 1907. No. 84776 C.

## Telautograph.

The Cerebotani Telautograph (Der Telautograph von Cerebotani). Hans Dominik. An illustrated detailed description of the mechanism, diagrams of connections, etc. 4000 w. Verkehrstech Woche u Eisenbahntech Zeitschr—Aug. 31, 1907. No. 86952 D.

## Telegraphphone.

The Latest Forms of the Telegraphphone (Die Neuesten Formen des Telegraphophons). E. Hytten. Illustrated description of the latest applications of Poulsen's device. 1800 w. Elektrotech Zeitschr—Sept. 5, 1907. No. 87656 D.

## Telegraph Receivers.

The Creed Receiving Telegraph Perforator. A perforating receiver which has been in successful operation for two years is illustrated and described. 1200 w. Elec Rev, Lond—June 14, 1907. No. 85237 A.

Kotyra Keyboard Wheatstone Perforator. Illustrated description of a Wheatstone perforator actuated by a typewriter keyboard which can be applied to existing apparatus. 700 w. Elec Rev, Lond—Aug. 16, 1907. No. 86590 A.

## Telegraphy.

Multiplex Telegraphy and Simultaneous Telegraphy and Telephony. William Maver, Jr. Explains the principles involved, illustrating by diagrams. 1800 w. Cassier's Mag—Dec., 1906. No. 80751 B.

A Review of Telegraphy. William Maver, Jr. The progress during 1906 is reviewed in both wire telegraphy and radio-telegraphy. 2500 w. Elec Rev, N Y—Jan. 12, 1907. No. 81597.

The Future Telegraph System. William J. White. Discusses the lines of

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progress indicated, and reviews what has been accomplished. Outlines the systems of machine telegraphy and their defects, and the ideal to be aimed at in the future. 2000 w. Elec Rev, Lond—Jan. 4, 1907. No. 81639 A.

Pollak and Virag Rapid Telegraph System (Télégraphe Rapide Système Pollak et Virag). M. D. Korda. Comprehensive description of this device and the results achieved with it. Ills. 4200 w. Bulletin De La Société Internationale Des Electriciens—No. 60. Dec., 1906. No. 82317 F.

The Baudot Telegraph System in India. C. T. Williams. Brief description of this system and its working in India. Ills. 3000 w. Elect'n, Lond—March 22, 1907. No. 83418 A.

Experimental Study of Telegraph Lines and Apparatus (Etude Expérimentale des Lignes et des Appareils Télégraphique). M. Devaux-Charbonnel. Researches on the resistance and insulation, capacity, self-inductance, etc., of telegraph lines. Mathematical discussion. Ill. 9000 w. Bull d l Soc Inter d'Elec'ns—Mar., 1907. No. 83696 F.

The Rowland Telegraphic System. Louis M. Potts. Describes a system which provides for an increased wire capacity, combined with greater efficiency of the operator and adaptability to present-day requirements. It combines multiplexing and printing. Ills. 8800 w. Pro Am Inst of Elec Engrs—April, 1907. No. 84511 D.

Discussion on "The Rowland Telegraphic System," at New York, April 15, 1907. 6000 w. Pro Am Inst of Elec Engrs—July, 1907. No. 86539 D.

Telegraph Switching: Metropolitan Intercommunication Scheme. An illustrated article discussing a system to meet the requirements of Greater London. 700 w. Elec Rev, Lond—May 24, 1907. Serial. 1st part. No. 84747 A.

Central-Battery Telegraphs. A brief illustrated description of the British post-office arrangements as applied to duplex and omnibus circuits. 1200 w. Elec Rev, Lond—June 28, 1907. No. 85496 A.

Examination of Telegraphers for Railroad Work. H. C. Hope. Read before the Ry. Tel. Supts. Assn. An account of the required examination. 1500 w. R R Gaz—July 5, 1907. No. 85466.

Inductive Disturbances to Telegraph Lines. John B. Taylor. Read before the Assn. of Ry. Tel. Supts. Discusses factors affecting induction in telegraph lines and the elimination of disturbance. 3000 w. Ry Age—July 12, 1907. No. 85556.



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Wire-Testing. L. M. Jones. Read before the Assn. of Ry. Tel. Supts. On the work at wire-testing offices, the methods used in locating and clearing of trouble, etc. 2000 w. Elec Rev, N Y—Aug. 24, 1907. No. 86546.

A "New" Sounder. Illustrated description of Vyle's direct-reading polarized sounder. 1000 w. Elec Rev, Lond—Sept. 6, 1907. No. 87061 A.

See also Printing Telegraphs, under COMMUNICATION.

### Telemechanic.

The Branly "Telemechanic" System. C. L. Durand. Prof. Branly's system, of operating mechanical devices from a distant point, is illustrated and described. 2500 w. Elec Rev, N Y—July 27, 1907. No. 85950.

### Telephone Exchange

The Hamilton, Ohio, New Telephone Exchange. J. E. Peavey. Brief illustrated description of a model manually operated telephone exchange recently put into service. 900 w. Elec Rev, N. Y.—Dec. 15, 1906. No. 80982.

### Telephone Relays.

Telephonic Relays (Le Relais Téléphonique). — Henry. Review of the different types now in use. Ills. 3800 w. L'Electricien—Jan. 19, 1907. No. 82347 D.

Telephone Relays (Le Relais Téléphonique). M. Henry. A review of the development of the telephone relay and a discussion of its present status. Ills. 3500 w. Soc Belge d'Electriciens—May, 1907. No. 84916 E.

Alternating-Current Relays on the Ferraris Principle (Zur Frage der Wechselstrom-Relais nach dem Ferraris-Prinzip). R. David and Dr. K. Simons. A mathematical paper discussing their efficiency. Ills. 2000 w. Elektrotech Zeitschr—Sept. 26, 1907. No. 87661 D.

### Telephone Switchboards.

Multiple Telephone Switchboards with Central Battery and Luminous Signals (Les Commutateurs Téléphoniques Multiples à Batterie Centrale et à Signaux Lumineux). A. Le Vergnier. Principally devoted to a description of installations on the Siemens & Halske system. Ills. 3800 w. Génie Civ—Sept. 28, 1907. No. 87612 D.

### Telephony.

Automatic Telephony (Das Automatische Telefon). Ernst Kronstein. Amplification of an address giving a general review of the various systems. Diagrams. Serial. 3 parts. 3500 w. Elek-

trotech u Maschinenbau—Oct. 28, Nov. 4 and 11, 1906. No. 80672 each D.

On the Measurement of the Constants of Telephone Lines. Béla Gáti. Gives a combination of the barretter method of measuring currents with the three-ammeter method of measuring power. 800 w. Elect'n, Lond—Nov. 2, 1906. No. 80353 A.

The Evolution of the Telephone. J. H. Winfield. A brief sketch of the changes and improvements in telephone apparatus, and the enormous development of the telephone business. 3000 w. Can Elec News—Nov., 1906. No. 80453.

Independent Telephone Development. James B. Hoge. Reviews the history of the Independent movement. 6500 w. Jour Fr Inst—Jan., 1907. No. 81903 D.

Review of Telephony for 1906. Edward E. Clement. Reports the remarkable extension and discusses the present problems of the industry, the progress of invention in this field, and brief notice of the more important patents. 2500 w. Elec Rev, N Y—Jan. 12, 1907. No. 81596.

Poulsen's Telephonic Message Recorder. Illustrates and describes this invention by means of which telephonic messages may be recorded or stored. 1000 w. Sci Am Sup—Feb. 23, 1907. No. 82582.

Central Battery Installations for Telephone Stations (Betrachtungen über Zentralbatterie-Schaltungen für Fernsprechanlagen). E. Neuhold. Arrangement of circuits described. Diagrams. 1700 w. Elektrotech Zeitschr—Jan. 24, 1907. No. 82353 B.

The Storage Battery in Telephony. C. E. Paxson. Considers the methods of design of central office storage batteries from the point of messages. 2000 w. Elec Wld—March 16, 1907. No. 83127.

Some Phases of Telephone Manufacture. G. S. Macomber. Outlines the history of the rapid growth of the telephone industry, and the organization of the manufacturing company to obtain the highest efficiency, reviewing the operations required to produce the apparatus. Ills. 5000 w. Sib Jour of Engng—Feb., 1907. No. 82500 C.

Widening Applications of the Telephone. William Maver, Jr. An illustrated article calling attention to recent extension in the use of the telephone. 2000 w. Cassier's Mag—Feb., 1907. No. 82280 B.

The Application of the Telephone to Railway Service. C. J. H. Woodbury. Abstract of a paper read before the New England St. Ry. Club. Brief account of some of the uses made of the telephone for railway service and the composite sys-

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tems, making possible the use of the same wires for the telegraph and telephone. 2200 w. Elec Rev, N Y—Feb. 23, 1907. No. 82557.

Telephone Retrospection. W. D. Sargent. Brief review of the development. 1800 w. Elec Rev, N Y—March 9, 1907. No. 82877.

Multiple Control Arrangement for the Nuremberg-Fürth Telephone Line (Vielfach Umschaltbare Einrichtungen für die Fernsprech Anlage Nürnberg-Fürth). J. Jacob. Detailed description. Illus. Serial. 2 parts. 8600 w. Elektrotechnische Zeitschrift—Feb. 14 and 21, 1907. No. 82963 each B.

Aspects of Recent Telephone Development. Howard S. Knowlton. Remarks on the remarkable increase in telephone traffic and an explanation of why the telephone message should be considered the unit. 2500 w. Elec Wld—Mar. 30, 1907. No. 83352.

Notes on the Development of Telephone Service. Fred De Land. Considers the forms of transmitters and the development of the wall telephone, and related subjects. Ills. 3000 w. Pop Sci M—May, 1907. No. 83920 C.

The Telephone Repeater. Louis Cohen. Discusses the requirements of a telephonic repeater, explaining how it differs from a telegraphic repeater. 800 w. Elec Wld—April 6, 1907. No. 83499.

Induction on Telephone Lines (Inductie verschijnzelen op telefoonlijnen). A. A. Oosting. Outline of several methods of avoiding inductive disturbances on telephone circuits. Illus. 5900 w. De Ingenieur—Mar. 2, 1907. No. 83656 D.

Fleet Telephony. Bradley A. Fiske. Explains a scheme for maintaining communication by telephone between the various vessels during fog. 1400 w. Pro U S Nav Inst—March, 1907. No. 84025 F.

Telephonic Transmission Measurements. B. S. Cohen. Describes results obtained in the investigation laboratory of the National Telephone Co., which include methods of measuring frequency, distortion, attenuation, current and power of telephone waves, and also line and instrument impedances. 5500 w. Inst of Elec Engrs—May 9, 1907. No. 84480 N.

The Home Telephone Company, Iron-ton, Ohio. Illustrated detailed description of a new automatic central energy system. 3000 w. Elec Rev, N Y—May 4, 1907. No. 84098.

Inductive Disturbances in Telephone Line. Louis Cohen. Discusses the question from a mathematical standpoint,

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showing that not only is the electromagnetic induction not a negligible quantity, but that in some cases its effect may be much larger than the electrostatic effect. Considers the results obtained by J. J. Carty. 2000 w. Pro Am Inst of Elec Engrs—May, 1907. No. 85285 D.

Magneto Generators. L. J. Flint. Considers the magneto generator used in local battery telephones, explaining a few of the reactions and favoring the rigid field end shaft construction. 2000 w. Purdue Engng Rev—1907. No. 85931 N.

On the Pupin Mode of Working Trunk Telephone Lines. Sir William Preece. Read before the British Assn. Gives an historical account of the efforts made to overcome the inductive effect, discussing the Pupin method, and giving theoretical reasons for its success. 4800 w. Elect'n, Lond—Aug. 9, 1907. No. 86462 A.

Telephone Troubles (Telephonische Störungen). H. Schreiber and S. Strauss. Discusses several of the accidents peculiar to telephone service with means of prevention. 3200 w. Elektrotechniker—July 10, 1907. No. 86264 D.

The Influence of High-Tension Conductors on Telephone Lines (Ueber den Einfluss der Hochspannungs-Leitungen auf die Betriebs-Fernsprech-Leitungen). F. Schrottke. A mathematical paper giving numerous examples of the effects of both alternating and direct current systems. Ills. 4500 w. Serial. 1st part. Elektrotech Zeitschr—July 18, 1907. No. 86279 D.

Distortion in Telephonic Transmission. Louis Cohen. Maintains that the resistance varies with the frequencies. 600 w. Elec Wld—Sept. 21, 1907. No. 87169.

Capacity in Telephone Lines (Della Capacità in Telefonía). R. Salvadori. A theoretical discussion of its causes, effects, methods of measurement, etc. Ills. 3500 w. Elettricità—Aug. 9, 1907. No. 86900 D.

See also Cables and Microphone, under COMMUNICATION.

## Telephotography.

Korn's Photographic Fac-Simile Telegraph. Information concerning one of the latest systems of reproducing photographic images at a distance by means of electricity. Ills. 1200 w. Sci Am—Feb. 16, 1907. No. 82421.

The Electrical Transmission of Pictures (La Transmission Electrique des Images). M. Henry. A review of the researches on the subject leading up to descriptions of the work of Fowler and Korn. Ill. Serial. 1st part. 3500 w. L'Elec'n—April 20, 1907. No. 84106 D.

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Telephotography (Fernphotographie). Br. Glatzel. Describes the sending and receiving apparatus of the Korn system, illustrating several examples of transmitted photographs. 2000 w. Verkehrstech Woche u Eisenbahntech Zeitschr—July 20, 1907. No. 86244 D.

Telephotography (La Photographie à Distance). L. Baradel. A review of the development of telegraphic transmission of pictures, illustrating apparatus employed and results obtained. 2500 w. Electricien—July 6, 1907. No. 86202 D.

Recent Developments in Picture Telegraphy. Dr. Alfred Gradenwitz. An illustrated report of tests made of the Korn apparatus, and description of the invention of H. Carbonelle. 1000 w. Sci Am—Oct. 26, 1907. No. 87878.

## Telharmonic System.

Some Electrical Features of the Cahill Telharmonic System. A. S. McAllister. Illustrated description of the electrical features of the 200-ton equipment installed in New York. 2800 w. Elec Wld Jan. 5, 1907. No. 81500.

## DISTRIBUTION

## Cables

The Telharmonium—An Apparatus for the Electrical Generation and Transmission of Music. An illustrated description of the New York plant embodying the system of Dr. Thaddeus Cahill. 2200 w. Sci Am—March 9, 1907. No. 82808.

The Telharmonic System of Producing Music Electrically. Illustrates and describes the telharmonium, an electrical machine for the production of music, and the system of distribution. 1000 w. Eng News—Feb. 28, 1907. No. 82672.

## Wires.

Standard Conditions and Specifications for Telephone or Other Low Tension Wires Crossing Railway Tracks. Given by E. E. Parsons in a paper read before the Assn. of Ry. Tel. Supts. In use by the Bell Telephone Co. of Canada. 1800 w. Eng News—Nov. 15, 1906. No. 80444.

## Wire Testing.

Wire Testing. L. M. Jones. Briefly considers the methods which have given satisfactory results. 2000 w. R R Gaz—Sept. 6, 1907. No. 87901.

# DISTRIBUTION

## Alternating Current.

Some Notes on Alternating-Current Distribution. A. J. Cridge. Read before the Incor. Munic. Elec. Assn. Shows in the form of curves and concise tables a few of the results obtained recently on the Sheffield (Eng.) system. 3800 w. Mech Engr—July 27, 1907. No. 86158 A.

## Balancers.

Static Balancers for 3-Wire Distribution Systems. An illustrated explanation of the principle of this apparatus. 2500 w. Mech Engr—Dec. 1, 1906. No. 80915 A.

Static Balancers. Charles C. Garrard. Gives a general description of the apparatus with a diagram illustrating the system, discussing it in detail, and describing its advantages. 2300 w. Elec Rev, Lond—June 14, 1907. Serial. 1st part. No. 85239 A.

Balancers versus Three-Wire Dynamos. Budd Frankenfield. Read before the Nat. Elec. Lgt. Assn. An interesting discussion of the advantages of the balancer for three-wire lighting sets. 4500 w. Elec Rev, N Y—July 13, 1907. No. 85536.

Induction Potential Regulators. W. T. Fernandez. Describes a type of transformer used in conjunction with poly-

phase rotary converter systems for the purpose of providing a method of variable control of the secondary voltage on the alternating-current side of the machines. 1600 w. Elec Wld—April 6, 1907. No. 83497.

Balancers. William H. Taylor. Gives diagrams showing the arrangements of connections for balancers, and discussing their defects. 700 w. Elec Rev, Lond—May 10, 1907. No. 84437 A.

Direct Current Compensators for Balancing Electric Circuits. H. M. Biebel. Describes a device whereby one or more neutral wires can be introduced into a two-wire circuit, making it possible to obtain circuits of proportional lower voltage. Ills. Discussion. 5000 w. Jour W Soc of Engrs—April, 1907. No. 84532 D.

## Cables.

Electric Cable Troubles. J. H. C. Brooking. Discusses the design of cables, the laying and joining, and the maintenance, and some of the troubles due to faulty work in all of these stages. 4000 w. Cassier's Mag—Dec., 1906. No. 80748 B.

Three-Phase Power Transmission by Underground Cables. Alfred Still. Aims to show how the line losses and capacity effects in a three-core underground cable

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can be approximately predetermined. 3000 w. *Elec Engr*, Lond—Nov. 16, 1906. No. 80712 A.

The Loading of Multiple-Conductor Cables, Laid Underground, With Reference to Heating (Die Belastung von Ver-seilen, im Erdboden Verlegten Mehr-leiter-Kabeln, mit Rücksicht auf Erwärmung). J. Teichmüller und P. Humann. Record of experiments on high-voltage, polyphase cables, with discussion of re-sults. Tables and diagrams. 2000 w. *Elektrotech Zeitschr*—Nov. 22, 1906. No. 81155 B.

Underground Transmission and Distri-bution of Electrical Energy. Charles E. Phelps. A brief study of the faults in cables, showing that most of them can be avoided. 1600 w. *Pro Am Inst of Elec Engrs*—Feb., 1907. No. 83047 D.

Drawing Conductors into Conduit. T. W. Poppe. Describes methods used in drawing in conductors after the conduit work is complete. 1200 w. *Elec Wld*—May 4, 1907. No. 84207.

Economical Conductor Section. Frank G. Baum. Discusses the method of de-termining the most economical size of conductor for a certain case. Considers the value of Kelvin's law. Also editor-ial. 2500 w. *Elec Wld*—May 25, 1907. No. 84608.

## Clyde Valley.

The Clyde Valley Power Company. Information showing the consumers sup-plied by this company with illustrated description of the line construction. 1800 w. *Elec Engr*, Lond—Dec. 14, 1906. No. 81238 A.

## Conduits.

Installing Feeder Conduits in Fireproof Buildings. T. W. Poppe. Calls attention to points needing care. Ills. 900 w. *Elec Wld*—March 2, 1907. No. 82776.

## Converters.

The Peebles-Bragstad-LaCour Convert-ers. Illustrated detailed description. 1200 w. *Elec Engr*, Lond—Jan. 25, 1907. No. 82139 A.

## Cost.

Cheapened Methods of Electrical Dis-tribution. J. H. C. Brooking. Abstract of a paper read before the Manchester Sec. of the Inst. of Elec. Engrs. Briefly considers the methods recently used for lowering the capital cost. Also discus-sion. 4000 w. *Elec Engr*, Lond—Dec. 21, 1906. No. 81334 A.

## Current Rectifiers.

Tests of a Mercury Current Rectifier

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## Insulation

(Untersuchung eines Quecksilbergeleich-richters). Dr. Josef Polak. Describes the apparatus, which was of the ordinary type produced by the General Electric Com-pany, and gives the results of tests with curves and tables. Ills. 2000 w. *Elek-trotech u Maschinenbau*—June 2, 1907. No. 85658 D.

Tests on a Mercury-Vapor Rectifier. Brief account of tests carried out by J. Polak, as described in a recent number of *Elektrotechnik und Maschinenbau*. Dia-grams. 700 w. *Elec Engr*, Lond—July 12, 1907. No. 85861 A.

A Home-Made Alternating-Current Rectifier. Wilmar F. Lent. Explains the essential features involved in the success-ful action of the electrolytic rectifier, and gives plans for the construction. 2000 w. *Sci Am*—Aug. 24, 1907. No. 86516.

Tantalum Electrodes. Günther Schulze. Abstracted from the *Ann. der Physik*. Gives an account of experiments on tan-talum electrodes as electrolytic rectifiers. 2400 w. *Elect'n*, Lond—Aug. 16, 1907. No. 86594 A.

## Dangers.

Hygienic Aspects of Interior Uses of Electricity (Zur Hygiene der Elektrischen Hauseinrichtungen). S. Jellinek. Dis-cusses the various sources of danger in the use of electricity, giving numerous examples. 6000 w. Serial, 2 parts. *Der Elektrotechniker*—May 10 and 25, 1907. No. 84966 each D.

## Faults.

Localization of Faults on a Three-Wire Network. F. Fernie. Briefly describes methods used with success. 2000 w. *Elec Rev*, Lond—March 15, 1907. No. 83266 A.

## Fuses.

Theoretical and Practical Points in Connection with Safety Fuses (Theo-retisches und Praktisches über Abschmelz-sicherungen). Georg J. Meyer. The first instalment gives a mathematical dis-cussion of fuses and considers various materials from which fuses may be made giving results of tests. Ills. 4000 w. Serial, 1st part. *Elektrotech Zeitschr*—April 25, 1907. No. 84174 D.

Fuses. Dr. Georg J. Meyer. Abstract translation from *Elek. Zeit*. Gives re-sults of investigations made of the heat-ing and arcing of fuses. 2200 w. *Elect'n*, Lond—Aug. 30, 1907. No. 86863 A.

## Insulation.

Electric Strength and Resistance of Two Different Insulating Materials in Contact (Elektrische Kraft und Durch-schlagsfestigkeit in zwei hintereinander

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geschalteten Isolierstoffen). Gustav Benischke. Diagrams and formulæ. 1500 w. *Elektrotechnische Zeitschrift*—Jan. 31, 1907. No. 82939 B.

"Flexibles," with Notes on the Testing of Rubber. Prof. Alfred Schwartz. Discusses fire risks from flexibles, conductors, heating due to excessive currents, insulation, oxidation of rubber, effect of high temperature, tests; flexible wiring system, etc. 19000 w. *Inst of Elec Engrs*—April 18, 1907. No. 84010 N.

## Insulators.

New Methods of Fastening Insulators. Carl Egner. Translated from the *Teknisk Tidskrift*. Illustrated description of this new method, the essential part being the use of insulating caps of extra strong, durable paper, impregnated with insulating material. 1200 w. *Elect'n, Lond*—March 8, 1907. No. 83110 A.

The Design and Testing of Electrical Porcelain. Dean Harvey. Describes methods and processes in preparing porcelain insulators. Ills. 3000 w. *Elec Jour*—Oct., 1907. No. 87561.

## London.

London Power Scheme. James Lawrence. Outlines the main features of a scheme for supplying electrical energy to London and adjacent districts. 2000 w. *Elec Wld*—Nov. 24, 1906. No. 80591.

## Losses.

Distribution Losses. John C. Potter. An account of methods used in determining the distribution losses of the A. C. lighting system of Milwaukee. Diagrams. 2500 w. *Wis Engr*—Dec., 1906. No. 81277 D.

An Analysis of the Distribution Losses in a Large Central Station System. Abstract of a paper by L. L. Elden, presented before the Boston branch of the Am. Inst. of Elec. Engrs. 2000 w. *Elec Wld*—June 22, 1907. No. 85227.

Voltage Lost in Direct-Current Wiring. N. A. Carle. Gives charts designed to read directly the volts lost for different strengths of current transmitted over various sizes of wire of different lengths, illustrating their use by examples. 600 w. *Power*—Aug., 1907. No. 86026 C.

## Mains Records.

Records and Drawings of Electric Mains. W. Mayall Milnes. Describes a scheme drawn up by J. E. Starkie, showing its advantages. Ills. 1500 w. *Elec Rev, Lond*—Aug. 16, 1907. No. 86591 A.

## Mining Plant.

The Reduction of Mining Costs by

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Electric Operation. Dr. Alfred Gradenwitz. An illustrated description of a novel Continental installation using a buffer storage battery with polyphase transmission. 1500 w. *Engineering Magazine*—Jan., 1907. No. 81193 B.

## Notation.

Notation for Polyphase Circuits. Charles H. Porter. Gives a notation based essentially on lettering every junction and terminal on the diagram of connections, and on the use of two subscripts with every symbol of current or electromotive force or vector representing them. 2000 w. *Elec Jour*—Sept., 1907. No. 87130.

## Phase Shifting.

The Production of a Shifting of Phase of 90° by Means of Inductance Alone (Die Erzeugung einer Phasenverschiebung von Genau 90° Durch Bloss Induktion). Dr. E. Müllendorff. The mutual inductance of two branch circuits is used besides their self-inductance. Formulæ. 200 w. *Elektrotech Zeitschr*—Nov. 15, 1906. No. 86667 B.

## Power Factor.

The Physical Meaning of Power Factor and the Significance of a Power Factor Less Than Unity Without Phase Difference. Albert F. Ganz. Defines the power factor and considers its physical meaning in a circuit with sinusoidal electromotive force and current, wave forms which are not sinusoidal, and pulsating continuous currents. 3500 w. *Jour Fr Inst*—Dec., 1906. No. 80944 D.

## Protective Appliances.

The Sources of Danger in Alternating Current Plants and Some Modern Protective Appliances (Die Gefahrenquellen in Elektrischem Wechselstromanlagen und einige Moderne Schutzvorrichtungen zur Abwendung der Gefahren). Hermann Zipp. Discussion of electric shock and its causes, and illustrated description of insulators, lightning arresters and other protective apparatus. 5500 w. *Zeitschr d Ver Deutscher Ing*—Nov. 24, 1905. No. 81147 D.

## Railway Feeding.

Advantages and Disadvantages of Feeding Tramway Systems in Isolated Zones as Compared with Closed Networks. Report of M. G. Rasch on the replies received to questions sent out concerning the advantages and disadvantages of feeding by open or closed circuits. 4000 w. *Elect'n, Lond*—Nov. 23, 1906. No. 80833 A.

## Regulations.

Wires Over Streets and Highways. An

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explanation of the English law on this subject. 1500 w. Elec Rev, Lond—Jan. 11, 1907. No. 81736 A.

French Legislation on Electric Distribution. Editorial on legislation dealing with distribution within the limits of private properties, and transmission along and across public thoroughfares. 1500 w. Engng—April 26, 1907. No. 84256 A.

Rules Governing the Installation of Theatre Wiring. Gives the suggested "Special Rules and Requirements for the Installation of Wires and Apparatus for Electric Light, Heat and Power in Theatres Where Potential of System Does Not Exceed 250 Volts" as recommended by the committee appointed by the Nat. Bd. of Fire Underwriters. 2500 w. Elec Wld—June 8, 1907. No. 84846.

Electricity in Factories. A draft of the regulations proposed by the Home Office (England) for the generation, transformation, distribution, and use of electrical energy in premises. 2200 w. Elec Engr, Lond—Aug. 30, 1907. No. 86860 A.

The Influence of the Underwriters' Rules on Electrical Development. C. J. H. Woodbury. Read before the N. Y. Elec. Soc. An account of the work of preparing the National Electrical Code, and showing that it represents a consensus of intelligent opinion. 2800 w. Cent Sta—Aug., 1907. No. 86328.

The Generation, Transformation, Distribution, and Use of Electric Energy. A discussion of draft regulations sent out for examination by suppliers and users of electrical energy, with the object of securing a complete code under the Factory and Workshop Act in regard to works where electric energy is used. 1800 w. Elec Engr, Lond—Sept. 6, 1907. No. 87054 A.

## Rotary Converters.

Rotary Converters v. Motor-Generators. Miles Walker. Abstract of paper and discussion before the Manchester Sec. of the Inst. of Elec. Engrs. A comparison of the advantages, considering the four types of apparatus at present in commercial use. 5500 w. Elect'n, Lond—Dec. 14, 1906. No. 81243 A.

Heating Effect of Quadrature Currents in Rotary Converters. J. H. Hunt. Gives a mathematical comparison of the heating effect in rotary converters and in synchronous motors or alternating-current generators. 800 w. Elec Wld—July 27, 1907. No. 85958.

Hunting in Rotary Converters. Norman G. Meade. Explains the cause and effect of hunting. 1500 w. Elec Wld—Aug. 3, 1907. No. 86151.

## DISTRIBUTION

### Shop Equipment.

The 220-Volt Direct Current System of Distribution. Explains the advantages of this system for shop equipment. 1300 w. Elec Age—Aug., 1907. No. 86701.

### Switchboards.

A Switchboard Attachment for Eletrolysis. E. L. Larison. Describes an arrangement, built entirely at a technical laboratory, which has given excellent results. Ills. 600 w. Eng & Min Jour—Nov 7, 1906. No. 80441.

Recent Design in Direct-Current Switchboards. Edward Schildhauer. Illustrates and describes some of the recent practice of the Chicago Edison Company in direct-current switchboard design. 900 w. Elec Wld—Dec. 1, 1906. No. 80807.

New Switchboard in the Hanoverian Technical High School (Die neue Hauptschaltanlage im Elektrotechnischen Institute der Technischen Hochschule Hannover). E. Beckmann. Ills., diagrams. 1700 w. Elektrotech Zeitschr—Jan. 10, 1907. No. 82330 B.

Some Aspects of Modern Switchboard Engineering. C. W. Stone. Read before the N. Y. Elec. Soc. Aims to point out some undesirable features to avoid, and to explain why some things are done. Ills. 5000 w. Elec Rev, N Y—March 9, 1907. No. 82880.

A General Solution of Change-Over Switch Problems. Frank M. Denton. Suggests a practical general solution of the problem of changing over from one diagram of connections to another, by means of throw-over switches, using the smallest possible number of blades and contracts. 500 w. Elec Wld—March 23, 1907. No. 83239.

Remote Control High-Tension Switch Gear. Frank Walker. Abstract of a paper read before the Glasgow Loc. Sec. of the Inst. of Elec. Engrs., containing a description of the L. C. C. tramways, Greenwich power station switch gear. Ills. 3000 w. Mech Engr—March 2, 1907. Serial. 1st part. No. 82889 A.

### Switches.

Modern Switchboard Devices. Illustrates and describes new designs of switches, explaining their operation. 1000 w. Elec Wld—Jan. 5, 1907. No. 81507.

### Switch Indicator.

A New End-Cell Switch Indicator. A. A. Radtke. Illustrated description of a new form of end-cell switch indicator designed to replace the telephone drop type.

## Switch Indicator

## ELECTRICAL ENGINEERING

### Synchronizing

800 w. Elec Wld—April 13, 1907. No. 83717.

### Synchronizing.

Synchronizing. Paul MacGahan and H. W. Young. Illustrates and describes types of synchronizing devices. 3000 w. Elec Jour—Sept., 1907. No. 87129.

### Systems.

Electric Distribution Systems. Prof. A. H. Ford. Extract from a paper read before the Iowa Elec. Assn. Discusses the selection and design of a system from the standpoint of cost and operating characteristics. 2000 w. Elec Wld—April 27, 1907. No. 83976.

### Three-Phase.

Three-Phase Four-Wire Distribution. H. L. Wallau. Shows the high transmission efficiency and economy of this system. Diagrams. 2000 w. Elec Age—April, 1907. No. 83956 C.

### Wires.

The Heating of Copper Wires by Electric Currents. A. E. Kennelly and E. R. Shepard. A report of research work in the measurement of temperature elevation of electric cables so far as relates to wires in water, soil, or wooden moulding. 5000 w. Pro Am Inst of Elec Engrs—June, 1907. No. 85752 D.

Power Factor, Alternating-Current Inductive Capacity, Chemical and Other Tests of Rubber-Covered Wires of Different Manufacturers. Henry W. Fisher. Gives results of tests made, one of the objects being to see if power-factor tests would not give an insight into the qualities of different makes of rubber-insulated wires. 3000 w. Pro Am Inst of Elec Engrs—June, 1907. No. 85754 D.

The Use of Sodium as Conductor in Place of Copper. Anson G. Betts. Discusses the advantages and limitations of this material, reporting investigations made. Also editorial. 2700 w. Elec Wld—Nov. 10, 1906. No. 80175.

### Wiring.

Extending Lighting Circuits in Com-

### DYNAMOS AND MOTORS

### A. C. Dynamos

pleted Fireproof Building. T. W. Poppe. Describes the work of changing outlets. Ills. 1200 w. Elec Wld—Jan. 5, 1907. No. 81509.

Some Critical Points in Electric Wiring. Donald Smeaton Munro. Abstract of a paper before the Students Soc. of Glasgow Inst. of Elec. Engrs. Describes various systems, pointing out their disadvantages and the precautions necessary, explaining how to make the work satisfactory. 3500 w. Elect'n, Lond—Jan. 11, 1907. No. 81740 A.

Wiring a Frame Dwelling with Flexible Metallic Conduit. Thomas W. Poppe. Suggestions, with illustrations, for an installation of flexible tubing. 1500 w. Elec Wld—Feb. 2, 1907. No. 82132.

Bell and Telephone Work in Fireproof Buildings. T. W. Poppe. Suggestions for wiring. Ills. 900 w. Elec Wld—April 6, 1907. No. 83498.

Enclosed Station Wiring. F. O. Blackwell. Introduction to a discussion. Gives photographs showing high-potential arcs. 500 w. Pro Am Inst of Elec Engrs—April, 1907. No. 84516 D.

Wiring Plans for Heating Devices. F. M. Feiker. Briefly explains the three general plans in use for wiring houses, giving a résumé of the Nat. Elec. Code rules governing the installation of heating devices, and gives details of houses illustrating the different systems. Ills. 2000 w. Elec Rev, N Y—June 1, 1907. No. 84718.

Wiring Plans for Heating Appliances. F. M. Feiker. Gives suggestions for wiring houses costing \$5000 to \$7000. Ills. 1000 w. Elec Rev, N Y—July 13, 1907. No. 85533.

The Fallacies of Free Wiring. G. Basil Barham. A criticism of the system claiming that it does not encourage long hour consumers, and leads to dissatisfaction. 2200 w. Elect'n, Lond—July 26, 1907. No. 86166 A.

### Wiring Risks.

Electric Wiring Risks. Frank Broadbent. Notes on American and English practice. 2800 w. Elec Rev, Lond—Sept. 6, 1907. No. 87059 A.

## DYNAMOS AND MOTORS

### A. C. Dynamos.

A Direct Method of Compensating the Armature Reaction of Alternators. A. Heyland. Explains a method based in principle on the provision of unequal air gaps for poles of opposite polarity in

conjunction with a reduction of turns on the poles with the smaller air gap. Ills. 3500 w. Elect'n, Lond—Oct. 26, 1906. No. 80303 A.

Alternating Current Machine with Auxiliary Field for the Direct Compensa-

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## A. C. Dynamos

## DYNAMOS AND MOTORS

## A. C. Waves

tion of Armature Reaction (Wechselstrom-Maschine mit Hilfsfeld zur Direkten Kompensierung der Ankerrückwirkung). A. Heyland. Illustrated description of method of making the armature reaction itself compensate its disturbing effects. 3500 w. *Elektrotech Zeitschr*—Nov. 1, 1906. No. 80657 B.

New Method of Compounding Alternators. Alexander Heyland, in *Elektrische Bahnen und Betriebe*. Describes a method for automatically keeping the terminal voltage of an alternator constant at all loads. Ills. 1400 w. *Elec Engr*, Lond—Nov. 9, 1906. No. 80478 A.

Alternating-Current Machines. An explanation of the elementary principles of the modern alternator and alternating-current motor. Ills. 3000 w. *Prac Engr*—Nov. 23, 1906. Serial. 1st part. No. 80822 A.

Surges of E. M. F. in Machines having Slotted Armature and Field (Über Pulsationen der Zahninduktion in Maschinen Mit Nuten im feststehenden und rotierenden Teil). O. S. Brogstad. Mathematical treatment of the subject of harmonics in A. C. Machines. Ills. 1200 w. *Elektrotechnik und Maschinenbau*—Dec. 30, 1906. No. 81832 D.

Magnetic Oscillations in Alternators and Their Bearing Upon the Design. G. W. Worrall. Gives results of a series of experiments made to determine the amount of the oscillations of magnetic flux in the poles of alternators, and also in the interpolar space. 2000 w. *Elect'n*, Lond—Feb. 22, 1907. No. 82828 A.

Alternating Current Machine with Separately Excited Field (Wechselstrom Maschine mit Hilfsfeld und verketteter Erreger Maschine). A. Heyland. Theoretical treatment of the action of such machines. Diagrams and table. 7800 w. Serial. 2 parts. *Elektrotechnische Zeitschrift*—Feb. 7 and 14, 1907. No. 82961 each B.

Self-Regulating Alternator with Auxiliary Field. A. Heyland. Illustrated description of an innovation aiming to counteract the demagnetizing action of the armature magnetomotive force of the load current on the magnetic field of the machine, and on the fall of potential. 2000 w. *Elec Wld*—Feb. 23, 1907. No. 82542.

Alternators with Auxiliary Regulating Field. A. Heyland. Gives a summary of a previous article on this subject, in which the theory of this new method of compensating and compounding alternators was developed, and shows how to determine the necessary alterations for any given

alternator. Ills. 4000 w. *Elect'n*, Lond—Feb. 8, 1907. Serial. 1st part. No. 82457 A.

Instructions for Installing and Operating Alternating-Current Generators. Instructions taken from a book prepared by the Allis-Chalmers Company for the use of its customers. Ills. 2500 w. *Elec Rev*, N Y—Feb. 2, 1907. No. 82104.

Alternator Troubles. A. E. Buchenberg. Discusses troubles due to excessive heating and poor voltage regulation of electrical machines. 2000 w. *Elec Wld*—March 2, 1907. No. 82775.

Compounded Alternators with Commutators. A. Heyland. Describes practical experiences with some large compounded alternators which have been running several years. Ills. 1500 w. *Elect'n*, Lond—July 19, 1907. No. 85987 A.

Two-pole A. C. Machines with Constant and Separately Excited Fields, a Contribution to the Construction of Turbo-generators (Zweipolige Wechselstrom-Maschinen mit feststehendem Felde und verketteter Erregermaschine, ein Beitrag zum Bau der Turbodynamos). A. Heyland. Theoretical and mathematical discussion of their design. Ills. 5000 w. *Elektrotech Zeitschr*—April 11, 1907. No. 84170 D.

## A. C. Motors.

The Alternating-Current, Compound-Wound Motor of the Felten & Guilleaume-Lahmeyer Works (Die Wechselstrom-Doppelschluss-Motor der Felten & Guilleaume-Lahmeyerwerke). M. Osnos. Illustrated detailed description of this type of motor, explaining its great value for hoisting purposes. 7000 w. Two articles. *Elektrotech Zeitschr*—April 11 and 18, 1907. No. 84172 each D.

General Theory of Alternate-Current Motors. H. Görges. Abstract from *Elek. Zeit*. Explains the action of single and polyphase alternate-current motors, giving a classification based on the nature of the rotor currents. 2000 w. *Elect'n*, Lond—Sept. 13, 1907. No. 87209 A.

## A. C. Waves.

Analysis of Alternating-Current Waves. S. A. Hazeltine. Describes methods for treating electric waves graphically, with the object of resolving waves into their harmonics and the determination of the effective voltage and current and the mean power directly from the wave-forms. 1500 w. *Stevens Ind*—Oct., 1906. No. 81093 D.

Effect of Iron in Distorting Alternating-Current Wave-Form. C. P. Steinmetz. Deals with a paper by Messrs. Bedell &



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## A. C. Waves

Tuttle, read before the Am. Inst. of Elec. Engrs., in which the writers discussed the relation between the harmonics introduced by iron into the alternating-current wave and the hysteresis loop of the iron to which these harmonics were due. 3800 w. *Elect'n*, Lond—Jan. 25, 1907. No. 82148 A.

Discussion on "The Effect of Iron in Distorting Alternating Current Wave-Form" at New York, September 28, 1906. Discussion of the paper presented by Frederick Bedell and Albert B. Tuttle. 6500 w. *Pro Am Inst of Elec Engrs*—Nov., 1906. No. 81063 D.

Distortion of Alternating-Current Waves due to the Presence of Iron (*Deformazioni d'Onda delle Correnti Alternate per la Presenza del Ferro*). Theoretical discussion illustrated by numerous curves. 1500 w. *L'Elettricità*—May 24, 1907. No. 84921 D.

## Armature Design.

Armature Laminations for Dynamos. H. M. Hobart. Discusses the material most suitable for armature laminations, and describes Ewing's hysteresis tester and its use, in the present article. 3500 w. *Mech Engr*—Jan. 5, 1907. Serial. 1st part. No. 81632 A.

Alternating-Current Armature Windings and Their Classification. H. M. Hobart and A. G. Ellis. Considers the derivation of single-phase windings, defining fundamental terms, discussing the types of coil, development of polyphase windings, etc. Gives a general scheme for nomenclature and classification of alternating-current windings and their application, showing the properties of a winding completely defined by its title. Ills. 2000 w. *Elect'n*, Lond—Jan. 4, 1907. Serial. 1st part. No. 81640 A.

Armature Notes. Arthur B. Weeks. Suggestions for overcoming difficulties. 1300 w. *Elec Wld*—Jan. 5, 1907. No. 81508.

Estimation of Armature Diameter. L. A. Freudenberger. Explains the usual method of determining the armature diameter, and armature power. 1000 w. *Elec Wld*—Jan. 19, 1907. No. 81718.

The Influence of the Teeth and Grooves on the Armatures on Dynamo Operation (*Der Einfluss der Zähne und Nuten auf die Wirkungsweise der Dynamoanker*). Reinhold Rüdenberg. A theoretical and mathematical paper. Ills. 5000 w. Serial. 1st part. *Elektrotech u Maschinenbau*—Aug. 4, 1907. No. 86966 D.

## Armature Reaction.

Armature Reaction in Polyphase Alternators. L. A. Herdt. Outlines an experi-

## DYNAMOS AND MOTORS

## Circulating Currents

mental method for the determination of the regulation of alternators under load. Diagrams. 2000 w. *Elec Rev*, N Y—Dec. 1, 1906. No. 80787.

Effect of Armature Reaction in Synchronous Motors and Rotary Converters. B. T. McCormick. States the laws upon which the diagram depends, and explains the construction of the general synchronous motor diagram and the rotary converter. 1500 w. *Can Soc of Civ Engrs*—March 14, 1907. No. 83288 N.

## Auxiliary Poles.

The Influence of Auxiliary Poles on the Operation of Dynamos and Motors (*Ueber den Einfluss der Wendepole auf die Wirkungsweise von Generatoren und Motoren*). Hermann Zipp. A mathematical paper. Ills. 3500 w. *Elektrotech u Maschinenbau*—Sept. 8, 1907. No. 87632 D.

## Brushes.

Carbon Brush Phenomena (*Die Vorgänge an Kohlebürsten*). Egon Siedek. Description of experiments and mathematical discussion supporting the view that changes in contact resistance of brushes may be explained on hypothesis that small arcs are formed between brush and commutator. Diagrams. 1600 w. *Elektrotech Zeitschr*—Nov. 15, 1906. No. 80665 B.

Practical Hints on Commutator Brushes (*Praktisches über Kommutatorbürsten*). G. Molnar. A discussion of various points. 3000 w. *Elektrotech u Maschinenbau*—Oct. 21, 1906. No. 80670 D.

Brush Holders and Brushes for 500-Volt Motors. Eugene C. Parham. Considers troubles incident to abuse, neglect, poor design, or bad condition of the commutator. 1500 w. *Elec Wld*—April 6, 1907. Serial. 1st part. No. 83501.

## Brushholders.

Some Brushholder Experiences. Henry Schlegel. Discusses what may be expected where brushholders are neglected or are maintained by incompetent labor unaided by the necessary jigs and gages. 3500 w. *St Ry Jour*—April 13, 1907. No. 83704.

## Circulating Currents.

Circulating Currents in Three-Phase Generators. A. G. Grier. Explains the limitations of the wave form in the three-phase system, giving an analysis of the wave forms of a three-phase star-connected generator in which circulating currents were known to exist when connected in delta. Diagrams and tables. 2000 w. *Elec Jour*—April, 1907. No. 83582.

# ELECTRICAL ENGINEERING

## Commutation

## DYNAMOS AND MOTORS

## Design

### Commutation.

Some Phenomena of Commutation. horne. Abstract of a paper read before Prof. F. G. Baily and W. S. H. Clegg the Glasgow Sec. of the Inst. of Elec. Engrs. Deals with the contact resistance of the brush, the value of the brush current, the currents in the short-circuited coils and the E. M. F. between the segment and the trailing edge of the brush. 4500 w. *Elect'n*, Lond—Nov. 23, 1906. Serial. 1st part. No. 80830 A.

Problems in Commutation. Miles Walker. Discusses some of the causes of bad commutation. 3500 w. *Elec Jour*—May, 1907. No. 84477.

### D. C. Dynamos.

The Distribution of Magnetic Flux in the Armature of a Direct Current Machine (Die Verteilung der Magnetischen Kraftlinien im Anker einer Gleichstrommaschine). Dr. J. v. Studniarski. Experimental investigation, showing that the maximum induction is at the center of the armature core. Diagrams. 1500 w. *Zeitschr d Ver Deutscher Ing*—Nov. 3, 1906. No. 80609 D.

Progress in the Construction of Direct Current Machines for Constant Current (Fortschritte im Bau von Gleichstrommaschinen für Konstanten Strom). Dr. E. Rosenberg. Well illustrated description of separately excited dynamo designed by the author, and adapted for arc lighting, train lighting, etc. Serial. 2 parts. 5000 w. *Elektrotech Zeitschr*—Nov. 15, 1906. No. 80662 each B.

Constant Direct-Current Dynamos. Dr. E. Rosenberg. Discusses the application and a few modifications of a machine invented by the author. It is well suited for train lighting, and delivers almost constant current under extreme conditions of service. 3000 w. *Elec Wld*—Nov. 10, 1906. No. 80377.

Unstable Conditions in the Operation of Direct Current Machines (Unstabile Betriebszustände bei Gleichstrom Maschinen). Karl Willy Wagner. Mathematical discussion. 2000 w. *Elektrotechnische Zeitschrift*—March 28, 1907. No. 83652 B.

Recent Advances in the Construction of Constant Current Dynamos. Dr. E. Rosenberg. Abstracted from the *Elektrotechnische Zeitschrift*. An illustrated account of recent developments. 1200 w. *Elect'n*, Lond—Dec. 21, 1906. No. 81357 A.

A Simple Experimental Dynamo. Paul H. Woodruff. Describes the construction, illustrating details. 1200 w. *Sci Am*—Dec. 29, 1906. No. 81293.

A New Type of Continuous-Current Dynamo-Electric Machine with Commutating Poles. V. A. Fynn. Describes a new type proposed by the author, stating its advantages. Considers it well suited to meet the conditions obtaining in turbo-generators. 2000 w. *Elect'n*, Lond—Nov. 30, 1906. No. 80914 A.

Three-Wire Direct-Current Generators. B. T. McCormick. Read before the Can. Elec. Assn. at Montreal. Gives briefly the principles of operation of three-wire generators, calling attention to some of their advantages. 1000 w. *Elec Rev*, N Y—Sept. 28, 1907. No. 87303.

### D. C. Motors.

The Design of Direct Current Motors. Charles H. Bedell. Discusses important points in the designs of motors for variable speed work. Ills. 2200 w. *Sch of Mines Qr*—Nov., 1906. No. 80855 D.

Notes on the Characteristic Curves of the Direct-Current Machine. Harrison W. Smith. Notes found useful in discussing the action of the direct-current machine. 3000 w. *Tech Qr*—March, 1907. No. 84474 E.

The Starting, Regulating and Stopping of Continuous-Current Motors. John T. Mould. A discussion of problems and methods giving curves. Ills. 5000 w. *Elec Engr*, Lond—July 26, 1907. Serial. 1st part. No. 86161 A.

A Method of Determining the Leading Dimensions of Large and High-Speed Continuous Current Dynamos. H. M. Hobart and A. G. Ellis. Describes a method based on a general relation between the leading dimensions, armature strength, number of poles, rated output and speed, and the commutating quality. 1200 w. *Elec Rev*, Lond—Sept. 6, 1907. Serial. 1st part. No. 87060 A.

Some Notes on the Care and Working of Continuous-Current Motors. Deals with the brushes, commutators, and points requiring attention in connection with these motors. 1200 w. *Prac Engr*—Sept. 20, 1907. No. 87331 A.

### Design.

Design Coefficients for Dynamo-Electric Machines. H. M. Hobart and A. G. Ellis. The present article considers the output coefficient of continuous current dynamo-electric machinery. 1000 w. *Elec Rev*, Lond—Nov. 2, 1906. Serial. 1st part. No. 80351 A.

The Mechanical Design of a Standard Line of Electric Motors. Hal Luckin. Enumerates the points which should not be overlooked. 2000 w. *Elec Rev*, Lond—May 24, 1907. No. 84749 A.

# ELECTRICAL ENGINEERING

## Eddy Currents

Mechanical Calculations and Data for Dynamo Design. Eric A. Lof. Gives methods and data for properly dimensioning some parts of the dynamo. Ills. 1200 w. Mach, N Y—Jan., 1907. No. 81411 C.

## Eddy Currents.

Eddy Current Losses in Alternating-Current Machines with Elliptical Rotating Field (Wirbelstromverluste in Wechselstrommaschinen mit Elliptischem Drehfelde). Reinhold Rüdenberg. A mathematical and theoretical discussion. Ills. 2500 w. Elektrotech u Maschinenbau—July 7, 1907. No. 86250 D.

## Guarantees.

The Definition and Determination of Guarantees of Efficiency and Drop in Potential in Electrical Machines and Transformers (Definition und Bestimmung der Garantien von Wirkungsgrad und Spannungsabfall bei Maschinen und Transformatoren). Ills. 3500 w. Elektrotech Rundschau—July 17, 1907. No. 86263 D.

## Heating.

Researches on the Heating of Armatures and Field Coils. Ludwig Ott. Illustrated description of experiments carried out in the Munich Technical High School. 2200 w. Elect'n, Lond—March 8, 1907. No. 83111 A.

Investigations of Heating in Electrical Machines (Untersuchungen zur Frage der Erwärmung Elektrischer Maschinen). Ludwig Ott. Considers heating in the armature and in the field coils, giving formulæ and describing tests to determine the value of coefficients. Ills. 2500 w. Zeitschr d Ver Deutscher Ing—July 20, 1907. No. 86276 D.

## Induction Motors.

A New Type of Induction Motor. Louis J. Hunt. Read before the Manchester Soc. of the Inst. of Elec. Engrs. Illustrates and describes a motor possessing all the characteristics of the ordinary type of slip-ring induction motor, but differing from it in the arrangement of the windings. 3500 w. Mech Engr—April 13, 1907. No. 83869 A.

The Leakage Reactance of Induction Motors. A. S. McAllister. Gives formulas for deriving the dispersion factor from the dimensions of any given induction motor. Also editorial. 2800 w. Elec Wld—Jan. 26, 1907. No. 81941.

Calculation of the Leakage-Reactance of Induction Motors. J. E. Hanssen. Presents, in a condensed form, the formulæ contained in Prof. Adams' papers, which in practice have proved to be ac-

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## Induction Motors

curate and convenient. 1000 w. Elec Wld—March 30, 1907. No. 83351.

Zig-zag Leakage of Induction Motors. R. E. Hellmund. A study of the values of zig-zag leakage. Diagrams. 3000 w. Pro Am Inst of Elec Engrs—March, 1907. No. 83764 D.

Polyphase Induction Motors. Robert D. Archibald. Abstract of a paper read before the Birmingham and District Electric Club. Describes the action, construction and possibilities of two- and three-phase induction motors. 3500 w. Elec Engr, Lond—May 24, 1907. No. 84746 A.

The Estimation of Starting Resistances for Three-Phase Induction Motors. D. A. Trickett. Describes the lines upon which the resistances of such machines may be estimated in design. 1200 w. Elec Rev, Lond—May 24, 1907. No. 84748 A.

Fractional Pitch Windings for Induction Motors. C. A. Adams, W. K. Cabot, and G. Æ. Irving, Jr. Reports an investigation made to develop a method by means of which the effects of such windings may be calculated. 4000 w. Pro Am Inst of Elec Engrs—Aug., 1907. No. 87143 D.

The Heyland Method of Starting and Regulating, and of Compensation for Phase Shifting of Induction Motors (Das Heylandsche Verfahren zum Anlassen und Regulieren und zur Kompensation der Phasenverschiebung von Induktionsmotoren). F. G. Wellner. Ills. 2500 w. Zeitschr d Ver Deutscher Ing—Sept. 7, 1907. No. 87649 D.

Application of the Principal Types of Polyphase Induction Motors. W. Edgar Reed. Discusses the most important characteristics to be considered in making applications. 2200 w. Elec Jour—Nov., 1906. No. 80283.

Some Practical Points on Polyphase Induction Motors. Fred P. De Wilde. Considers the rotating field, stator windings, test for field symmetry, drying out a water soaked motor, methods of speed control, etc. 1500 w. Power—Dec., 1906. No. 81001 C.

The Single-Phase Induction Motor. Alfred Still. Explains the action of the induction motor without reference to the idea of a resultant revolving magnetic field. 4000 w. Elec Wld—Dec. 8, 1906. Serial. 1st part. No. 80907.

Notes on Induction Motor Characteristics and Their Bearing on its Applications. J. W. Rogers. Briefly considers the characteristics which have a direct bearing on its application to any particular class of work, and the manner in which they are affected by different con-

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## Insulation

ditions of the supply circuit. Also the selection of the most suitable type for any particular service. 2000 w. *Elec Engr*, Lond—Jan. 18, 1907. No. 81980 A.

Practical Testing of Induction Motors. R. E. Hellmund. Discusses some of the phenomena causing inexactnesses in results derived from diagrams. 2000 w. *Elec Rev*, N Y—Jan. 19, 1907. No 81700.

The Induction Motor. C. J. Spencer. A discussion of the induction motor, the functions of the secondary, and methods of calculating the resistance, and related matters. 2800 w. *Elec Age*—May, 1907. Serial. 1st part. No. 84621 C.

## Insulation.

The Selection of Machine Insulation Material. William S. Conant. Discusses materials intended for the insulation of electric machinery, methods of testing them, and the effects of certain ingredients. 3000 w. *Elec Wld*—July 20, 1907. No. 85847.

## Interpoles.

The Present State of Direct-Current Design as Influenced by Interpoles. F. Handley Page and Fielder J. Hiss. A statement of the present condition of direct-current design, showing how it has been affected by the interpole machine which ensures a more efficient ventilation, lower first cost due to saving in material, and improved efficiency. 8500 w. *Inst of Elec Engrs*—May 23, 1907. No. 85036 N.

## Losses.

Magnetic Leakage and Its Effect in Electrical Design. William Cramp. Read before the Manchester Sec. of the Inst. of Elec. Engrs. Considers both harmful and useful leakage, and methods of remedying the former in various machines. Gives an account of research work. Ills. 6000 w. *Elec Engr*, Lond—Jan. 11, 1907. Serial. 1st part. No. 81733 A.

The Iron Losses in Asynchronous Machines. Thomas F. Wall. The losses in these machines are mentioned, with special reference to the pulsation of the flux in the teeth. Experiments are described. 2000 w. *Elect'n*, Lond—March 1, 1907. Serial. 1st part. No. 82892 A.

The Experimental Determination of the Losses in Motors. C. F. Smith. Abstract of a paper read before the Manchester Loc. Sec. of the Inst. of Elec. Engrs. Describes the methods in use for obtaining a separate determination of the iron and friction losses, in both continuous and alternating-current motors, and discusses the advantages and disadvan-

## DYNAMOS AND MOTORS

tages of the various methods. 2500 w. *Elect'n*, Lond—Aug. 30, 1907. Serial. 1st part. No. 86865 A.

## Magnet Coils.

Aluminium Coils. Felix Singer. Information concerning a German invention, utilizing the property of aluminium to become covered with a layer of oxide, for winding magnet coils, etc., with bare aluminium wire. 1400 w. *Elec Rev*, Lond—July 26, 1907. No. 86163 A.

## Principles.

Elementary Principles of Dynamos. Clarence Renshaw. Explanation, with diagrams. 700 w. *Ry & Loc Engng*—March, 1907. No. 82703 C.

## Protection.

Protection of Motors in Dusty Places. Kingsley Williams. Illustrates and describes various methods of housing and ventilating motors. 800 w. *Elec Wld*—May 4, 1907. No. 84208.

## Railway Motors.

The Anatomy of a Railway Motor and Control Equipment. James Lyman. Gives briefly the fundamental principles governing electricity and magnetism, and their application to the railway motor and controlling equipments, discussing train control and related topics. Ills. Discussion. 10700 w. *Pro W Ry Club*—Feb. 19, 1907. No. 83158 C.

The Inter-Pole Railway Motor. C. A. Mudge. Explains the advantages of the use of inter-poles in railway motors. 2000 w. *Elec Wld*—March 9, 1907. No. 83014.

Large Single Phase A. C. Locomotive Motor (Grosser Lokomotivmotor für Einphasen-Wechselstrom). E. C. Zehme. A 300 h.p. motor of the Eichberg-Winter type. 350 w. *Elektrotechnische Zeitschrift*—Feb. 7, 1907. No. 82960 B.

See also Motors, under STREET AND ELECTRIC RAILWAYS.

## Repulsion Motor.

A Combined Single-Phase and Continuous-Current Series and Compensated Repulsion Motor. E. Danielson. Abstract from *Elektrotechnische Zeitschrift*. Illustrated description. 900 w. *Elect'n*, Lond—July 26, 1907. No. 86169 A.

## Single-Phase.

Slip, Torque and Stator Loss in Single-Phase Motors (Schlüpfung, Drehmoment und Statorverluste des Einphasenmotors). Adolf Thomälen. Mathematical treatment. Diagrams and formulae. 2100 w. *Elektrotechnische Zeitschrift*—Feb. 28, 1907. No. 82966 B.

## Single-Phase

# ELECTRICAL ENGINEERING

## Single-Phase

## DYNAMOS AND MOTORS

## Synchronous Motors

The Vector Diagram of the Compensated Single-Phase Alternating-Current Motor. W. I. Slichter. An analysis of the character and cause of the reactions effecting the efficiency and power-factor. 1000 w. Pro Am Inst of Elec Engrs—May, 1907. No. 85284 D.

The Construction and Application of the Serviceable Single-Phase Motor (Die Bauart und Verwendung der praktisch Brauchbaren Einphasen-Wechselstrommotoren). A. Linker. Ills. Serial. 2 parts. 5000 w. Elektrotech u Polytech Rundschau—May 8 and 15, 1907. No. 84951 each D.

The New Double-Circuit Single-Phase Motor of the Felten & Guilleaume-Lahmeyer Works. M. Osnos. Abstract from the *Elektrotechnische Zeitschrift*. In the present article this motor is considered as a lift motor, showing how it fulfils the requirements. 1500 w. Elect'n, Lond—July 12, 1907. No. 85865 A.

The Cramp Single-Phase Motor. W. Cramp. A report of tests of this machine. 2000 w. Elec Rev, Lond—Aug. 9, 1907. No. 86461 A.

The Starting of Single-Phase Commutator Motors. Rudolf Richter. Abstract translation from *Elektrotechnische Zeitschrift*. A report of tests, with diagrams. 1200 w. Elect'n, Lond—Nov. 16, 1906. No. 80721 A.

The Siemens-Schuckert Single-Phase Series Motor. Extracts from a recent paper by Dr. Rudolf Richter describing certain improvements in the design and construction of these motors. 2500 w. Elec Rev, Lond—Dec. 14, 1906. No. 81241 A.

Siemens-Schuckert Alternating-Current Series Motors. Rudolf Richter. Slightly abbreviated translation from the *Elektrotechnische Zeit*. Deals with the means employed by this company to improve the characteristics that are inferior to the continuous-current-motor. 3300 w. Elect'n, Lond—Nov. 23, 1906. Serial. 1st part. No. 80831 A.

Single-Phase Motors. H. R. Speyer. Considers briefly the induction motor and the series repulsion motor, and motors combining the two types and their characteristics. Ills. 2500 w. Elec Engr, Lond—Feb. 1, 1907. Serial. 1st part. No. 82240 A.

## Sparking.

Calculation of Dynamo Sparking Characteristics. Carlton L. Kennedy. Discusses the determining of the limiting commutating current from the standpoint of reactance voltage, also considering the

effect of armature current, and the influence of a displacement of the brushes. 2400 w. Elec Wld—Feb. 16, 1907. No. 82431.

## Speed Regulation.

Notes on Speed Regulation of Direct-Current Motors Under Different Conditions of Working. J. W. Rogers. A brief review of the methods used in present-day practice to obtain variations in speed over a wide range, without detracting from the efficiency of the system. Serial. 1st part. 2300 w. Prac Engr—June 7, 1907. No. 85095 A.

Motor Control. Describes a patent granted to V. A. Fynn relating to means for operating single-phase motors having a shunt characteristic at any desired speed independently of the periodicity of the supply and the number of poles of the motor. 700 w. Elec Engr, Lond—June 7, 1907. No. 85100 A.

## Standardization.

Standardization of Tramway Motors. A committee report presented at the Milan International Conference. 1800 w. Elec Engr, Lond—Nov. 2, 1906. No. 80350 A.

## Starters.

A New Automatic Method of Starting Motors. Dr. Martin Kallmann. Abstract from *Elek. Zeit*. An account of the application of iron resistances to the starting of motors, describing various forms. 1200 w. Elect'n, Lond—Oct. 11, 1907. No. 87835 A.

New Motor Starter. Brief illustrated description of the "helical drum starter" which is essentially different from any in present use. 1000 w. Elec Rev, Lond—Feb. 15, 1907. No. 82601 A.

## Synchronous Motors.

Synchronous Motor Problems. H. H. Norris. Gives a study of the Metropolitan Alternator in the power house of the New York City Railway Co. 1700 w. Sib Jour of Engng—June, 1907. No. 85135 C.

Interaction of Synchronous Machines. Morgan Brooks. Presents a new circle diagram showing the physical relation of the quantities and conditions involved, deriving fundamental equations, and developing simple loci for solving the problems of synchronous operation. 5000 w. Pro Am Inst of Elec Engrs—June, 1907. No. 85753 D.

Circular Current Loci of the Synchronous Motor. A. S. McAlister. Describes certain simple circular current loci of the synchronous motor which allow its char-

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## Synchronous Motors

acteristics to be determined equally as readily as does the circular current locus of the induction motor. 3500 w. *Elec Wld*—Aug. 24, 1907. No. 80544.

The Use of the Synchronous Motor as Phase Compensator. R. E. Hellmund. A study of the relation of capacity of synchronous motors to percentage fuel-load power-factor, discussing a series of cases covering the conditions which occur most frequently in practice. 2000 w. *Elec Rev*, N Y—Aug. 24, 1907. No. 86545.

Excitation Characteristics of the Synchronous Motor. A. S. Langsdorf. A mathematical study stating the assumptions. 800 w. *Elec Wld*—Oct. 19, 1907. No. 87804.

Troubles with Synchronous Motors. E. B. Raymond. Explains this motor as an alternating-current generator used to absorb current instead of giving it out. Discusses some of the troubles in operating, and means of correcting them. 1700 w. *Engr*, U S A—Nov. 15, 1906. No. 80437 C.

Graphic Solutions of Some Synchronous Motor Problems. William Tatlow. Gives graphic solutions of problems in connection with synchronous motors, explaining the meaning of the symbols used. 1000 w. *Elec Engr*, Lond—Jan. 4, 1907. No. 81634 A.

## Three-Wire.

Three-Wire Dynamos. Illustrates and describes various types of three-wire dynamos. 1800 w. *Elec Wld*—July 20, 1907. No. 85850.

## Troubles.

Motor and Dynamo Troubles. W. T. Fernandez. Examines some causes of troubles in these machines and the remedies. 1200 w. *Power*—Jan., 1907. No. 81461 C.

## Turbo-Generators.

Two-Pole Turbo-Alternator with Stationary Field and Magnetically-Shunted Exciter. A. Hegland. Discusses means of reducing the capital cost of such machines, with special reference to two-pole machines. 3500 w. *Elect'n*, Lond—April 12, 1907. No. 83872 A.

Steam Turbine Dynamos. A. G. Ellis. Discusses the advantages of the steam turbine as a prime mover, also reviews the limiting factors to the outfit, and the effect of increasing the speed. 4000 w. *Mech Engr*—Nov. 24, 1906. Serial. 1st part. No. 80826 A.

Tests and Operating Results on the 5500-KW Turbo-Generator of the Interborough Rapid Transit Company. Gives

## DYNAMOS AND MOTORS

## Windings

tables and diagram showing the results of tests. 800 w. *Elec Jour*—July, 1907. No. 85708.

Curtis Turbines in Railway Service. August H. Kruesi. Read before the Am. St. & Int. Ry. Engng. Assn. Reports results of three recent tests and discusses the advantages of turbine generators. 2500 w. *St Ry Jour*—Oct. 19, 1907. No. 87817.

A New Design for the Rotating Fields of Turbo-Dynamos (Eine Neue Polrad-Konstruktion für Wechselstrom-Turbo-dynamos). E. Rosenkötter. Illustrated description of method of securing rotating pole pieces of alternators, adopted by Bruce, Peebles & Co. of Edinburgh. 600 w. *Elektrotech Zeitschr*—Oct. 25, 1906. No. 80654 B.

Willans-Dick-Kerr 2000-KW. Turbo-Alternator for Sydney. Illustrated detailed description of both the turbine and alternator. 3000 w. *Elec Engr*, Lond—June 7, 1907. No. 85098 A.

Continuous-Current Turbo-Generators (Gleichstrom-Turbogeneratoren). H. I. C. Beyer. A discussion of the points of design in which they differ from the normal type of dynamo. Ills. 4000 w. Serial. 1st part. *Elektrotech u Maschinenbau*—Sept. 29, 1907. No. 87635 D.

## Variable Speed.

A New Variable Speed Motor. Benjamin F. Bailey. Describes a simple method by which either all or one-half of the armature conductors can be connected, thus giving two normal speeds, one twice as great as the other. Also editorial. 2500 w. *Elec Wld*—May 11, 1907. No. 84311.

A New Variable Speed Electric Motor or Variable Voltage Dynamo. Dr. L. Torda. An illustrated description of a variable speed motor or a variable voltage generator with reluctance control which has been devised by the author. 2500 w. *Elect'n*, Lond—July 5, 1907. No. 85583 A.

## Winding Diagrams.

Continuous-Current Armature Winding Diagrams. H. M. Hobart. An explanation of the practice of diagrammatically representing windings of armatures. Ills. 2500 w. *Elec Rev*, N Y—March 30, 1907. Serial. 1st part. No. 83348.

## Windings.

Calculation of Auxiliary Pole Windings. Arthur Keller. Explains the calculation of the ampere-turns required to produce the commutating fluid. 2000 w. *Elec Wld*—March 9, 1907. No. 83016.

## ELECTRICAL ENGINEERING

### Windings

The Calculation of Polyphase and Single-Phase Windings by Vector Diagram (Die Berechnung der Emk von Mehrphasen und Einphasen Wicklungen auf Grund eines Vektor diagrammes der Feldstärke). H. Görges. Extended mathematical treatment. Diagrams. 2900 w. *Elektrotech Zeitschr*—Jan. 3, 1907. No. 82328 B.

A Method of Calculating the E. M. F. of Polyphase and Single-Phase Windings. H. Görges. Abstracted from *Elektro-*

### ELECTRO-CHEMISTRY

### Cells

*technische Zeitschrift*. The author establishes an ampere-turn vector diagram by means of which the space wave-shape of the magnetic flux, and the flux through each tooth, may be determined at any instant. 1500 w. *Elect'n, Lond*—March 1, 1907. No. 82893 A.

Series vs. Parallel Windings in Alternating-Current Motors. R. E. Hellmund. Gives a comparison between parallel and series connections. 1200 w. *Elec Wld*—Feb. 23, 1907. No. 82543.

## ELECTRO-CHEMISTRY

### Alkali Works.

The New Electrolytic Alkali Works at Niagara Falls. Extracts from a paper by Dr. L. H. Backeland on the Townsend cell, which has been in successful use for a year in Niagara Falls. Also editorial. Ills. 3000 w. *Elec-Chem & Met Ind*—June, 1907. No. 84778 C.

### Bleaching.

Electric Bleaching (Zum Kapitel: Elektrische Bleiche). V. Engelhardt. Abstract discussion of the subject. 2400 w. *Electrochem Zeitschr*—March, 1907. No. 83670 G.

The Problems of Bleaching with Paper-Pulp Electrolytic Hypochlorite Solutions. W. Pollard Digby. Notes on investigations made by the writer which lead him to believe very strongly in the possibilities of electrolytic hypochlorite processes for paper and textile bleaching. 4500 w. *Elec-Chem & Met Ind*—May, 1907. No. 83979 C.

### Calcium.

Critical Review of the Electrolytic Production of Calcium (Kritische Betrachtungen Ueber Die Elektrolytische Gewinnung Des Calcums). Carl Bürgel. Detailed description of processes. Continuation of serial. Illus. 2100 w. *Electrochem Zeitschr*—March, 1907. No. 83671 G.

### Calcium Cyanamide.

The Calcium Cyanamide Industry (Sull Industria della Calciocianamide). A review of the history of this industry, outlining the process of manufacture and giving costs. 2200 w. *Industria*—June 2, 1907. No. 85623 D.

### Carbon Tetrachloride.

Manufacture and Uses of Carbon Tetrachloride. J. R. Crocker. Gives information in regard to carbon tetrachloride and illustrates and describes apparatus

for its production. 3300 w. *Elec-Chem & Met Ind*—July, 1907. No. 85487 C.

### Caustic Soda.

McDonald Electrolytic Bleach and Caustic Soda Plant. J. R. Crocker. Illustrates and describes a plant installed at Johnsonburg, Pa., which has been in operation over a year. 700 w. *Elec-Chem & Met Ind*—Feb., 1907. No. 82201 C.

### Cells.

Aluminum Cells (Ueber Aluminiumzellen). Dr. Max Büttner. Account of tests of storage battery used for train lighting in Prussia having aluminum and iron plates and ammonium carbonate electrolyte. Diagrams. 3500 w. *Zeitschr f Elektrochem*—Nov. 2, 1906. No. 81122 G.

A New Primary Battery for Large Currents. Carl Hering. Remarks at the meeting held Oct. 18, 1906, on the Decker Primary Battery, an interesting form of battery for relatively large outputs. 2000 w. *Jour Fr Inst*—Nov., 1906. No. 80406 D.

The Standard Cell. F. A. Wolff and C. E. Waters. Gives important results of test at the U. S. Bureau of Standards, which show that the constancy of the e. m. f. of the cells depends largely on the methods employed in preparing the mercurous sulphate, and when proper materials are used the e. m. f. of different cells will vary but slightly. 1200 w. *Elec Wld*—Jan. 12, 1907. No. 81621.

Selenium Cells. R. A. L. Snyder. Read before Pittsburg Sec. of Inst. of Elec. Engrs. Information concerning selenium and the uses to which it has been applied. Short discussion. Ills. 4000 w. *Pro Am Inst of Elec Engrs*—July, 1907. No. 86530 D.

Standard Cells. K. E. Guthe and C. L. von Ende. From the *Physical Rev.* Gives results of experiments on both Clark and Cadmium cells, having regard to the

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## Cells

materials used in construction. 2000 w. Elect'n, Lond—Aug. 16, 1907. No. 86595 A.

Mercurous Sulphate, Cadmium Sulphate, and the Cadmium Cell. G. A. Hullett. From the *Phys. Rev.* Describes a series of experiments made on cadmium cells, and gives the results of some experiments with regard to the ageing of standard cells. 4000 w. Elect'n, Lond—Sept. 6, 1907. No. 87066 A.

An Electrical Method of Depolarizing Primary Batteries. Frank W. Springer. Describes an invention relating to the improvement of systems for the supply of current in which primary cells or batteries are employed, especially the improvement of ignition systems of explosive engines. 2000 w. Engrs' Soc of Univ of Minn—Year Book, 1907. No. 84629 N.

## Condensers.

Aluminium Electrolytic Condensers. O. M. Corbins and S. Maresca. Abstracted from *Il Nuovo Cimento*. Gives summary of results from a long series of experiments. 1000 w. Elect'n, Lond Dec. 20, 1906. No. 81528 A.

## Conductivity.

On the Conductivity of Electrolytes in Pyridine and Other Solvents. Kenneth Somerville Caldwell. A report of experimental work carried out in Leipzig under the direction of Prof. A. Hantzsch. 800 w. Elec Engr, Lond—Aug. 30, 1907. No. 86859 A.

## Copper Peroxide.

Production of Peroxide of Copper by Electrolysis (Bildung von Kupferperoxyd durch Elektrolyse). E. Muller and F. Spitzer. Diagram. 1600 w. Zeitschr für Elektrochemie—Jan. 25, 1907. No. 82915 G.

## Corrosion.

Corrosion of Copper and Copper-Alloys. John G. A. Rhodin. Remarks on the close connection between chemical and electrical phenomena, introducing a theory of dissolution of metals, considering the problem more as an electrical one than a chemical. 4000 w. Engr, Lond—July 19, 1907. Serial. 1st part. No. 85998 A.

The Effect of Stress Upon Corrosion of Iron. Prof. William H. Walker and Mr. Colby Dill. Abstract of a paper describing investigations and results. Also abstract of paper by Dr. A. S. Cushman offering a new electrolytic theory of the corrosion of iron, and editorial. 4500 w. Elec-Chem & Met Ind—July, 1907. No. 85488 C.

The Electrolytic Theory of the Cor-

## ELECTRO-CHEMISTRY

## Electrolysis

rosion of Iron. Dr. Allerton S. Cushman. A study of the real cause of iron rust. 3000 w. Sci Am Sup—Aug. 31, 1907. Serial. 1st part. No. 86681.

Corrosion of Iron. Abstracts of papers by Dr. Allerton S. Cushman, and by Dr. William H. Walker, Anna M. Cederholm, and Leavitt N. Bent, with editorial comment. Deals with the causes of corrosion and means of overcoming the troubles due to it. 5500 w. Elec-Chem & Met Ind—Sept., 1907. No. 86839 C.

The Corrosion of Iron: Rusting. An outline of some of the experiments and applications of the electrolytic theory, as given in papers by Allerton S. Cushman, and Prof. W. H. Walker, with interesting comparison of the various theories. 3300 w. Eng News—Sept. 26, 1907. No. 87244.

See also same title, under CIVIL ENGINEERING, MATERIALS OF CONSTRUCTION.

## Detinning.

Electric Detinning of Tinplate Scrap. G. Crudo. Compiled from *Rassegna Mineraria*. Information concerning the author's work in this field, describing processes and examining the economic conditions. 1500 w. Min Jour—July 13, 1907. No. 85868 A.

## Electrolysis.

Independent Stirrer for Electrolysis. E. L. Larrison. An inexpensive substitute for rotating cathodes is described and the method explained. 2200 w. Eng & Min Jour—Dec. 22, 1906. No. 81215.

The Application of the Electron Theory to Electrolysis. E. E. Fournier-d'Albe. Abstract of a paper read before the Faraday Soc. An investigation of electrolytic action on the basis of the electron theory. 2500 w. Elect'n, Lond—Jan. 18, 1907. No. 81986 A.

Alternating-Current Electrolysis. J. L. R. Hayden. A report of investigations made to determine to what extent alternating currents passing between any metallic conductor and the ground would produce electrolytic corrosion. Gives conclusions. 5800 w. Pro Am Inst of Elec Engrs—Feb., 1907. No. 83043 D.

Soil Electrolysis with Formation of a Liquid Sodium Potassium Alloy. Henry Bassett, Jr. Describes a case showing the magnitude of the chemical processes which may be caused by such earth currents. 3000 w. Elect'n, Lond—April 12, 1907. No. 83876 A.

Influence of Iron in Copper Electrolysis. E. L. Larson. Gives results showing the retardation of varying amounts of iron, and the effect of other influences. 1200 w.



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## Electrolytic Assaying

Eng & Min Jour—Sept. 7, 1907. No. 86807.

## Electrolytic Assaying.

The Results of Researches on Electrolytic Analysis (Elektroanalytische Forschungsergebnisse). Franz Peters. A review of the progress of knowledge and methods of the electrolytic determination of metals, the first part of the serial giving a general, historical introduction to the subject. 7000 w. Serial. 1st part. Glückauf—Aug. 17, 1907. No. 86940 D.

## Electro-Metallurgy.

Electro-Metallurgy in 1905 and the First Half of 1906 (Die Electro-Metallurgie im Jahre 1905 und im Ersten Halbjahre 1906). Dr. Franz Peters. Illustrated comprehensive general review. Serial. 9 parts. 33000 w. Glückauf—Oct. 20, 27; Nov. 3, 10, 17, 24; Dec. 1, 8 and 15, 1906. No. 81107 each D.

Electrochemistry and Electro-metallurgy in 1906. Charles F. Burgess. Remarks on the results of progress in this field, the electric furnace and its products, electroplating, etc. 2500 w. Elec Rev, N Y—Jan. 12, 1907. No. 81593.

Applied Electro-Metallurgy Up to the End of 1906. John B. C. Kershaw. A summary of the various electro-metallurgical industries, describing briefly the processes and methods in use. Ills. 3000 w. Engineering Magazine—Oct., 1907. Serial. 1st part. No. 87281 B.

Applied Electro-Metallurgy Up to the End of 1906. John B. C. Kershaw. This second article gives a review of the ferro-alloys, iron and steel, lead, nickel, siloxicon, silicon, sodium, tin, and zinc processes. Ills. 3000 w. Engineering Magazine—Nov., 1907. No. 87968 B.

The Electrometallurgical Industries in 1907. John B. C. Kershaw. Reviews the progress of these industries during the past year, and their position at the present time. Ills. 4500 w. Cassier's Mag—May, 1907. No. 84049 B.

The Economic Status of the Electric Furnace. Wilder D. Bancroft. Considers some of the advantages of the electric furnace, the nature of the competition it has to face, the products manufactured, illustrating points in which electricity is superior to other forms of heating. 2000 w. Sib Jour of Engng—June, 1907. No. 85136 C.

New and Unique Electric Furnaces Without Electrodes. Frank C. Perkins. An illustrated description of the Hiorth induction electric furnace. 900 w. Min Rept—March 28, 1907. No. 83377.

Old and New Patterns of Electric Fur-

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## Electro-Metallurgy

naces (Ueber elektrische Ofen älterer und neuer Systeme). Gustav A. Pummer. Descriptive article, treating of various types that have been tried. Illus. Serial. 2 parts. 3200 w. Oesterr Zeitschr f Berg und Hüttenwesen—March 2 and 9, 1907. No. 83636 each D.

Electric Furnace Methods of Iron and Steel Production. John B. C. Kershaw. Illustrated description of various electric furnaces and processes. 2500 w. Ir Trd Rev—Nov. 29, 1906. No. 80753.

The Electric Furnace and Its Applications to the Metallurgy of Iron and Steel. R. S. Hutton. Read before the Sheffield Soc. of Engrs. & Met. Discusses recent developments to be considered in connection with power generation, the applications of electric power to industries, and some recent types of electric furnaces. 6000 w. Engng—Dec. 7, 1906. No. 81028 A.

The Present State of the Electro-Metallurgy of Iron and Steel (L'Etat Actuel de l'Electrosidérurgie). Léon Guillet. Well illustrated and comprehensive description of electric plants, furnaces and processes. Serial. 1st part. 1 plate. 3500 w. Génie Civil—Dec. 8, 1906. No. 81137 D.

The Electrothermal Metallurgy of Iron. Major E. Stassano. Discusses the principles upon which the electrothermal process depends and gives an illustrated description of the rotating furnace designed by the writer. 7000 w. Sci Am Sup—Dec. 22, 1906. No. 81089.

Use of the Electric Furnace for Iron and Steel. (Ueber die Fortschritte in der Elektrostahl-Darstellung). Prof. Eichhoff. Exhaustive discussion of several forms of electric furnace for pig iron, steel, etc., with tables showing results obtained in controlling the composition of the product. Illus. Serial. 2 parts. 10,500 w. Stahl und Eisen—Jan. 9, and 16, 1907. No. 81810 each D.

The Application of Electricity to the Smelting of Iron Ores. Horace Allen. Briefly considers the chemical reactions involved in the reduction of iron and the present methods adopted, and gives figures showing the efficiency of electric furnaces for this work. 2200 w. Mech Engr—Jan. 12, 1907. No. 81729 A.

The Electric Furnace in Steel Making and Copper Smelting. T. Scott Anderson. Considers the application of the electric furnace to ore reduction, describing the author's patents. 1500 w. Eng & Min Jour—June 29, 1907. No. 85331.

Electrolytic Lead Refining and Treatment of Slimes and By-Products. A. G. Wolf. Explains the theory and practice

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## Electroplating

of lead refining by the Betts process, describing a plant and the process of testing the slimes, and all by-products. 1300 w. Min Rept—May 9, 1907. Serial. 1st part. No. 84304.

See also same title, under MINING AND METALLURGY, IRON AND STEEL.

## Electroplating.

Sheffield Plate and Electro-Plate. Sherard Cowper-Coles. Gives historical sketches of Sheffield plate and electro-plate, describing methods, testing, etc. Ills. 6000 w. Jour Soc of Arts—July 12, 1907. Serial. 1st part. No. 85851 A.

"Spotting Out" of Electroplated Work: Its Cause and Remedy. Considers the trouble due to imperfect castings, and caused by liquid in the cavities of the metal gradually oozing out after the deposit has been put on. The remedy is to remove the liquid in the pores. Ills. 2200 w. Brass Wld—Nov., 1906. No. 80515.

Producing Rose-Gold Deposits. Explains the essential features for obtaining a good rose-gold deposit. 1000 w. Brass Wld—Feb., 1907. No. 82553.

Some Points on the Plating Barrel. An illustrated article giving suggestions in regard to running the plating machine. 1000 w. Brass Wld—Feb., 1907. No. 82554.

The Electro-deposition of Brass and Bronze and the Maintenance of the Solutions. Reviews the history of brass plating and gives much information. 3000 w. Brass Wld—March, 1907. Serial. 1st part. No. 83283.

Electro-Deposition of Brass. Charles H. Proctor. Read before the Am. Found. Assn. Suggestions on the electro-deposition of brass upon baser metals. 1000 w. Foundry—July, 1907. No. 85750.

Soldered Nickel Anode Hooks. Paul Johnson. Explains the advantage of soldering the anodes and method of doing it. 600 w. Brass Wld—March, 1907. No. 83282.

Deposition of Black-Nickel in the Plating Barrel. Wilbur G. Stratton. An account of methods that gave a satisfactory deposit. 700 w. Brass Wld—March, 1907. No. 83284.

The Electroplating of Plaster of Paris Objects. Illustrates and describes the process of coating works of art with metal. 4800 w. Brass Wld—April, 1907. No. 83928.

Recovering Silver from Cyanide Solutions. Describes the recovery by precipitation and by evaporation, stating the dangers of the first, and illustrating an

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## Insulating Films

evaporating furnace. 1000 w. Brass Wld—May, 1907. No. 84453.

Heavy Gold Deposits and a Good Solution for Producing Them. 2000 w. Brass Wld—Sept., 1907. No. 87187.

## Energy.

Electrical and Chemical Energy. Gustaf M. Westman. Makes a comparison between the kinetic energy of gases and the electric current, and shows the relation between chemical and electrical energy, considering also how the current is conducted. 2500 w. Jour Fr Inst—March, 1907. No. 83170 D.

## Glocken Process.

The Aussig Glocken Process for Alkali Chloride Electrolysis. Dr. Otto Steiner. An explanation of the process, stating its advantages and disadvantages. 2000 w. Elec-Chem Met Ind—May, 1907. No. 83977 C.

## Gold Recovery.

The Electrolytic Recovery of the Gold from Rolled Gold-Plate Scrap. Describes the method of electrolytic refining used because of its economy. Ills. 2500 w. Brass Wld—Sept., 1907. No. 87185.

## Hydrates.

Hydrates in Solution. Abstracts of four papers contributed to the general discussion of this subject at a meeting of the Faraday Society. I. Thermochemistry of Electrolytes. W. R. Bousfield and T. M. Lorry. II. Hydrates in Solution. Dr. J. C. Philip. III. Methods for Determining the Degree of Hydration. Dr. G. Senter. IV. Stability of Hydrates. Dr. A. Findlay. 8500 w. Elect'n, Lond—July 26, 1907. No. 86168 A.

## Hypochlorites.

The Hermite Electrolytic Process at Poplar. Charles V. Biggs. Read before the Faraday Soc. A contribution to the facts available on the subject of the electrolytic production of hypochlorites. 2000 w. Elec Engr, Lond—Nov. 23, 1906. No. 80827 A.

## Insulating Films.

An Optical Study of the Thin Film Deposited by Electrolysis on an Aluminium Anode. O. M. Carbino. Abstract translation from *Il Nuovo Cimento*. Describes measurements by optical methods of the thickness of these films. 800 w. Elect'n, Lond—Jan. 25, 1907. No. 82146 A.

The Capacity and Resistance of Aluminium Anode Films. C. McCheyne Gordon. Abstracted from the *Phys. Rev.* A study of these films, describing investigations. 2500 w. Elect'n, Lond—March 22, 1907. No. 83419 A.

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## Nickel Plate Waste

### Nickel Plate Waste.

Experiments for Saving Copper and Nickel from the Waste Pieces of Nickel Plated Sheets (Ueber Einige Versuche zur Gewinnung von Kupfer und Nickel aus Abfällen Nickelplattierter Bleche). Carl Richter. Description of electrolytic process. 2500 w. *Elektrochem Zeitschr*—Dec., 1906. No. 81120 G.

### Nitrogen.

The Artificial Production of Nitrates from the Atmosphere. J. B. Van Brussel. An illustrated description of the Birke-land and Eyde process for the production of nitric oxide. 1500 w. *Eng News*—Feb. 7, 1907. No. 82185.

Fixation of Nitrogen of the Air (Ueber Fixierung des Stickstoffs der Luft und Verwendung der gewonnenen Körper). G. Erlwein. Ills. Serial. 2 parts. 4800 w. *Elektrotech Zeitschr*—Jan. 10 and 17, 1907. No. 82340 B.

The Electrochemical Production of Nitric Acid from the Air (La Fabrication Electrochimique de l'Acide Nitrique à l'Aide des Eléments de l'Air). Jean Es-card. A review of the investigations on this subject with descriptions of the processes employed. Ills. 8000 w. *Soc Belge d'Electriciens*—May, 1907. No. 84915 E.

Fixation of Atmospheric Nitrogen. Abstract translation of portions of a paper by Dr. Georg Erlwein, published in *Elektrotechnische Zeitschrift*. Deals with researches in this field, and the processes relating to the manufacture of calcium cyanamide, discussing its practical applications. Ills. 2500 w. *Elec-chem & Met Ind*—March 10, 1907. No. 82871 C.

Fixation of Atmospheric Nitrogen by Calcium Carbide (La Fixation de l'Azote atmosphérique par le Carbone de Calcium). Henri Demierre. Brief description of the process. 1600 w. *Bulletin Technique de la Suisse Romande*—Jan. 25, 1907. No. 82914 D.

The Electro-Thermic Combustion of Atmospheric Nitrogen. F. Howles. Read before the Soc. of Chem. Ind. Discusses the factors involved and gives a general summary of what has been accomplished. 4800 w. *Elect'n, Lond*—July 19, 1907. No. 85985 A.

Electrothermic Combustion of Atmospheric Nitrogen. Abstract of a paper by F. Howles, giving an interesting résumé of the chief processes employing electric discharges through air. 3000 w. *Elec-Chem & Met Ind*—Sept., 1907. No. 86836 C.

The Fixation of Nitrogen. Norman Whitehouse. An account of a research

## ELECTRO-CHEMISTRY

## Sodium

carried out to obtain a workable commercial process by which nitrogen of the atmosphere could be obtained combined as ammonia or nitrate. 2500 w. *Elec-Chem & Met Ind*—Sept., 1907. No. 86838 C.

The Formation of Compounds of Nitrogen and Oxygen from the Air by Electricity (Die Darstellung von Stickstoff-Sauerstoff-Verbindungen aus Atmosphärischer Luft auf Elektrischem Wege). Dr. B. Springfeldt. A description of various devices and processes for the fixation of atmospheric nitrogen. Ills. 1500 w. *Serial. 1st part. Elektrochem Zeitschr*—Aug., 1907. No. 86948 G.

### Oxygen.

The Commercial Preparation of Oxygen and Hydrogen (Per la Preparazione Industriale dell'Ossigeno e dell'Idrogeno). An illustrated description of a new device for the production of hydrogen and oxygen by the electrolysis of water. 1700 w. *Serial. 1st part. Il Monit Tech*—Aug. 10, 1907. No. 86906 D.

### Ozone.

Industrial Application of the Electrical Discharge (Aplicación Industrial del Efluvió Eléctrico). F. M. Fernández. Discusses the various applications of ozone in the purification of water, in chemistry and in the sugar industry. Ills. 5000 w. *Energia Eléctrica*—May 25, 1907. No. 84927 D.

### Phosphorus.

Production of Phosphorus in the Electric Furnace. From an article by George W. Stose, in a recent publication of the U. S. Geol. Surv. Reviews old methods of making phosphorus, and gives information in regard to recent processes. 2200 w. *Elec-Chem & Met Ind*—Oct., 1907. No. 87503 C.

### Review, 1906.

The Electro-Chemical and Electro-Metallurgical Industries in 1906. John B. C. Kershaw. Gives details of the position of the various industries, the most progress having been made in the copper, iron, steel, and nitrogen industries. 3000 w. *Elect'n, Lond*—Feb. 8, 1907. No. 82458 A.

### Sodium.

The Extraction of Metallic Sodium. C. E. Carrier, Jr. Aims to present a more complete bibliography of this subject than has previously been published, together with brief descriptions, which will make it a history of the art. 4300 w. *Elec-Chem & Met Ind*—Nov., 1906. *Serial. 1st part. No. 80425 C.*

## ELECTRICAL ENGINEERING

### Storage Batteries

### ELECTRO-PHYSICS

### Dielectrics

#### Storage Batteries.

Recent Storage Battery Improvements. Sherard Cowper-Coles. Read before the Soc. of Engrs. Considers electrodes that retain a large quantity of the electrolyte in themselves, and in which the active material is not necessarily porous. 3000 w. Elec Engr, Lond—Nov. 9, 1906. Serial. 1st part. No. 80480 A.

Storage Batteries and Their Electrolytes. R. W. Vicarey. (Abstract.) Deals with the lead accumulator from the manufacturing point of view. Claims to have discovered a new irreducible sulphate of lead, and discusses the effect of certain impurities on current-density in formation. 2000 w. Elect'n, Lond—Dec. 28, 1906. No. 81527 A.

Experiments on the Distribution of Current in Accumulators. U. Schoop. Abstract translation. A study of the distribution of current in accumulators, and the way in which the electrolyte conducts the current, especially the action of the "electrolytic shunt." 2200 w. Elect'n, Lond—March 1, 1907. No. 82894 A.

Storage Batteries. V. Karapetoff. Explains the properties of storage batteries and the advantages from their use. Describes their construction and chemical action, and method of testing. Ills. 2800 w. Elec Jour—June, 1907. Serial. 1st part. No. 85131.

See also same title, under GENERATING STATIONS.

## ELECTRO-PHYSICS

### Air Conductivity.

The Conductivity of Air in an Intense Electric Field and the Siemens Ozone Generator. Arthur W. Ewell. Presents results obtained by the author, describing the investigations. 2500 w. Am Jour of Sci—Nov., 1906. No. 80162 D.

### Compass Variations.

The Influence of the Surface Currents Flowing Through Iron Ships' Hulls on the Magnetic Compass (Die Einwirkung der Durch den Eisernen Schiffskörper Fließenden Flächenströme auf das Kompassfeld). C. Arldt. Discussion of formulae, with experimental determination. Tables and diagrams. 1800 w. Elektrotech Zeitschr—Nov. 22, 1906. No. 81156 B.

### Conduction.

Electric Conduction in Metals. Abstract of a lecture by J. J. Thompson before the Inst. of Elec. Engrs. An account of the modern theory and the results thus far accomplished. 3500 w. Engng—March 1, 1907. No. 82898 A.

The Modern Theory of Electrical Conductivity of Metals. Prof. J. J. Thomson. Lecture before the Inst. of Elec Engrs. Gives the electron or corpuscle theory of electrical conduction in metals, and an explanation of the Hall effect. 5500 w. Elect'n, Lond—March 15, 1907. No. 83267 A.

### Conductors.

Some Newly Observed Forces Within an Electric Conductor. Abstract of a paper by Dr. E. F. Northrup giving a summary of experiments made and conclu-

sions reached. Also editorial. 2500 w. Elec Wld—March 9, 1907. No. 83017.

Forces in the Interior of an Electric Conductor. Edwin F. Northrup. Abstract from *Phys. Rev.* Describes experiments for showing the forces existing in the interior of conductors when traversed by a current, and considers their magnitude theoretically. 4500 w. Elect'n, Lond—Sept. 13, 1907. No. 87206 A.

Mechanical Action of Currents on Conductors. P. Bary. Abbreviated translation from *L'Eclair Elec.* Describes experiments which show that when a current passes through a conductor certain mechanical forces are set up causing a stricture effect. Ills. 3500 w. Elect'n, Lond—Sept. 6, 1907. No. 87064 A.

### Currents.

Wattless Currents. An explanation of the effects of induction and capacity in a circuit in which alternating current is flowing, in language familiar to those who are acquainted with the principles of continuous currents. 1200 w. Aust Min Stand—Dec. 19, 1906. Serial. 1st part. No. 81969 B.

### Dielectrics.

Dielectric Losses with High Pressure Alternate Currents. Dr. Paul Humann. Abstract translation. An account of experimental investigations, giving results. 1500 w. Elect'n, Lond—Nov. 16, 1906. No. 80722 A.

Spark Potentials in Liquid Dielectrics. Robert F. Earhart. Abstracted from the *Physical Review*. A report of experimental investigation. 600 w. Elect'n, Lond—Dec. 28, 1906. No. 81530 A.

# ELECTRICAL ENGINEERING

## Divided Circuits

On the Loss of Energy in Dielectric Substances in Condensers and Cables (Ueber den Energieverlust im Dielektrikum von Kondensatoren und Kabeln). Bruno Monasch. Methods and results of experimental determination for various substances. Ills. 9500 w. Serial. 2 parts. *Elektrotech u Maschinenbau*—April 21 and 28, 1907. No. 84156 each D.

Physical Characteristics of Dielectrics. A. P. M. Fleming. A study of the effects produced by electrostatic stresses in gases, liquids, and solids. 2500 w. *Elec Jour*—July, 1907. No. 85706.

## Divided Circuits.

Theory of Alternating Currents in Divided Circuits (Zur Theorie der Wechselstrom Verzweigung). Leo Lichtenstein. Mathematical treatment. Diagrams and formulæ. 4400 w. *Elektrotechnische Zeitschrift*—Feb. 7, 1907. No. 82958 B.

## Electric Waves.

On the Motions of Ether Produced by Collisions of Atoms or Molecules Containing or Not Containing Electrodes. Lord Kelvin. Read before the British Assn. A study of the motions of ether. 3000 w. *Elect'n, Lond*—Aug. 16, 1907. No. 86592 A.

Electric Wave Propagation. J. E. Taylor. Read before the Inst. of P. O. Elec. Engrs. The paper aims to give mental pictures of the actions and processes underlying electric wave propagation. Diagrams. 3500 w. *Elec Rev, Lond*—April 19, 1907. Serial. 1st part. No. 83992 A.

Ionized Gas Electric Wave Detectors. C. Tissot. Translated from the *Jour. de Physique*. An account of experimental investigations. 1800 w. *Elect'n, Lond*—Feb. 22, 1907. No. 82829 A.

An Easily-Made High-Frequency Apparatus. A. Frederick Collins. Illustrates and describes this apparatus. 1200 w. *Sci Am Sup*—Jan. 5, 1907. No. 81382.

Apparatus for Measuring Electric Wave Lengths (Construzione Di Un Cumometro Per Radiotelegrafia). P. Barreca. Ills. 3500 w. *Rivista Marittima*—Nov., 1906. No. 82904 E + F.

## Electromagnets.

The Value of the Coercive Force with Continuous and with Intermittent Magnetization (Ueber die Grösse der Koerzitivkraft bei Stetiger und bei Sprungweiser Magnetisierung). E. Gumlich. Showing that with soft iron the coercive force is greater when the magnetization changes gradually than when it changes

## ELECTRO-PHYSICS

*per saltum*. Tables. 1500 w. *Elektrotech Zeitschr*—Oct. 25, 1906. No. 80655 B.

Electro-Magnetism. Roger Atkinson. An explanation of the electric current flow in a coil or helix. Ills. 900 w. *Ry & Loc Engng*—Jan., 1907. No. 81447 C.

Contribution to the Design of Electromagnet Coils for Powerful Currents (Beitrag zur Berechnung der Elektromagnetspulen für Starkstrom-Relais und dergl.). Robert Edler. Mathematical paper; table and diagrams. Serial. 3 parts. 5600 w. *Elektrotechnik und Maschinenbau*—Dec. 16, 23 and 30, 1906. No. 81822 each D.

The Heating Coefficient of Magnet Coils. G. A. Lister. (Abstract.) Gives heating curves obtained in air with machine stationary, with machine running light, and with machine fully loaded. 800 w. *Elect'n, Lond*—Dec. 28, 1906. Serial. 1st part. No. 81526 A.

Electro-Magnetism. Roger Atkinson. An explanation of the magnetic field that surrounds a single wire or conductor carrying a current. Diagrams. 700 w. *Ry & Loc Engng*—Dec., 1906. No. 80871 C.

Design of Electromagnets (Zur Berechnung der Elektromagnete). Fritz Emde. Mathematical Discussion of the calculation of the factors entering into the design of an electromagnet. Serial. 3 parts. 7000 w. *Elektrotechnik und Maschinenbau*—Nov. 25, Dec. 2 and 9, 1906. No. 81821 each D.

## Electrons.

Electrons (Los Electrones). Julio J. Gatti. A general review of the electron theory. 9000 w. *Anal Sociedad Cien Argen*—Aug., 1906. No. 84930 F.

New Conceptions of the Structure of Atoms (Neuere Vorstellungen über den Aufbau der Atome). Rob. Lang. Abstract of addresses at Stuttgart on atomic theories and the constitution of matter. 2500 w. *Elektrotech Zeitschr*—Nov. 1, 1906. No. 80661 B.

The Properties of Electrons. Samuel Sheldon. Presidential address. An explanation of electrons and their physical properties, and their effects when in motion. 8000 w. *Pro Am Inst of Elec Engrs*—May, 1907. No. 85276 D.

Electrons (Sur les Electrons). H. Becquerel. Mathematical and theoretical discussion of the electron theory, reviewing the work of the leading investigators of the subject. Ills. 5600 w. *Bull Soc In d' Electriciens*—May, 1907. No. 84913 F.

# ELECTRICAL ENGINEERING

## High Potentials

### High Potentials.

Experiments with High Potentials. E. Jona. Reports experiments made with exceedingly high potentials on cables and aerial lines at the Milan Exhibition. Ills. 1300 w. *Elect'n, Lond*—Nov. 9, 1906. No. 80484 A.

### Hysteresis.

Magnetic Hysteresis Phenomena. M. O. Bolser. Describes a device for showing the cyclic change in reluctance when a portion of a transformer core is revolved synchronously with the alternation of the flux. 1100 w. *Elec Wld*—Sept. 28, 1907. No. 87320.

### Induction Coils.

E. M. F. and Spark Discharge of a Secondary Current (Der Einfluss eines Sekundären Stromes auf Überspannung und Funkenbildung bei Stromunterbrechung). G. Benischke. A mathematical treatment of the subject of induced currents. 1500 w. *Elektrotechnik und Maschinenbau*—Nov. 18, 1906. No. 81820 D.

Calculation of the Self-Induction of Coils (Berechnung der Selbstinduktion gerader Leiter und rechteckiger Spulen). J. K. Sumec. Mathematical discussion. 2100 w. *Elektrotechnische Zeitschrift*—Dec. 20, 1906. No. 81837 B.

The Design of Induction Coils. William O. Eddy and Melville Eastham. Considers the type of coils employing open cores of iron wire, giving facts and suggestions useful to designers and users of these instruments. 7000 w. *Elec Wld*—Dec. 22, 1906. No. 81218.

The Design of a 12-Inch Induction Coil. William O. Eddy. Aims to show the application of the principles of induction coil design. 2000 w. *Elec Wld*—Jan. 5, 1907. No. 81510.

The Construction of Induction Coils. William O. Eddy. Treats of some of the theoretical considerations and the technical designs of induction coils, dealing with methods of practical construction and the more important manufacturing details. 2000 w. *Elec Wld*—Feb. 2, 1907. No. 82131.

The Making of Small Induction Coils with Bare Wire. A. Frederick Collins. Describes a method of winding with bare wire on the primary helix instead of using insulated wire. Ills. 1500 w. *Sci Am Sup*—April 13, 1907. No. 83580.

The Design of Plunger Magnets. C. P. Nachod. Shows the relation between the pull and the diameter of the plunger, and other properties of the magnets. 800 w. *Elec Wld*—Sept. 21, 1907. No. 87168.

## ELECTRO-PHYSICS

## Magnetic Detector

The Secondary Current of the Induction Coil. H. Clyde Snook. A discussion of the currents flowing in the secondary of an induction coil, as observed by means of a Duddell High Frequency Oscillograph. Ills. 2200 w. *Jour Fr Inst*—Oct., 1907. No. 87759 D.

### Insulation.

The Insulation of Electrical Appliances. O. J. Williams. Abstract of a paper read before the Newcastle Loc. Sec. of Inst. of Elec. Engrs. Reviews the elementary phenomena of dielectrics, and explains to some extent the scientific basis on which effective insulation depends. 1500 w. *Elect'n, Lond*—April 12, 1907. No. 83875 A.

Face of Insulating Materials Under Oil. J. W. Esterline, J. R. Clark, J. E. Breese. Illustrated report of a series of investigations. 1000 w. *Purdue Engng Rev*—1907. No. 85941 N.

### Interrupter.

How to Construct an Independent Interrupter. A. Frederick Collins. Illustrates and describes a type embodying all the improvements of the double-spring interrupter, stating its advantages, and explaining the operation. 1600 w. *Sci Am Sup*—Dec. 15, 1906. No. 80979.

### Ionization.

The Nature of Ionization—Ionomania. H. E. Armstrong. Read before the British Assn. The author considers the word "ionization" is being improperly used, "dissociation" being really all that is usually implied. 2500 w. *Elect'n, Lond*—Aug. 9, 1907. No. 86464 A.

### Leakage.

Leakage Currents in the Moisture Condensed on Glass Surfaces. Prof. F. T. Trouton, and C. Searle. Abstract from the *Phil. Mag.* A report of experimental investigation of the behavior of these currents and the requirements necessary for the appearance of these sensitive conditions of the surface. 2000 w. *Elect'n, Lond*—Jan. 4, 1907. No. 81644 A.

### Magnetic Alloys.

Experiments on the Heusler Magnetic Alloys. K. E. Guthe and L. W. Austin. Gives the main results of the work of Dr. Heusler and his associates in producing from non-magnetic metals, alloys which approach iron in their magnetic properties. 2400 w. *Elect'n, Lond*—Nov. 23, 1906. Serial. 1st part. No. 80832 A.

### Magnetic Detector.

The Construction of a Magnetic Detec-

# ELECTRICAL ENGINEERING

## Magnetism

tor. Edward G. Gage. Gives directions for making a home-made detector, with brief notes on early researches. Ills. 2000 w. Sci Am—April 6, 1907. No. 83457.

## Magnetism.

Critical and Supplementary Notes on the Theory of the Magnetism of Iron (Kritische Betrachtungen und Ergänzungen zur Theorie des Ferromagnetismus). R. Gans. Theoretical and mathematical discussion of the accepted formulæ. Diagrams. 5500 w. Elektrotech Zeitschr—May 23, 1907. No. 84987 B.

On the Law of Magnetic Attraction at a Distance and Its Applications (Loi d'Attraction Magnétique à Distance et ses Applications). R. V. Picou. A theoretical, mathematical discussion with examples showing the importance of further knowledge. Ills. 3500 w. Bull Soc Int d'Electriciens—May, 1907. No. 84914 F.

## Oscillations.

The Poulsen Arc as a Means of Obtaining Continuous Electrical Oscillations. J. A. Fleming. Abstract of a paper read before the Phys. Soc. Describes experiments on the Poulsen arc, and discusses results. 3500 w. Elect'n, Lond—Sept. 20, 1907. No. 87339 A.

The Oscillatory Discharge in Iron Wires. A. Battelli and L. Magri. Translated from *Physikalische Zeit.* Gives results of investigations. 2200 w. Elect'n, Lond—July 12, 1907. No. 85866 A.

Investigation of High-Frequency, High Potential Oscillating Discharges by Means of the Braun Tube. E. L. Weber. Describes an experiment for the purpose of obtaining a direct graph of the wave form of a high-frequency, high-potential oscillating discharge, by using the Braun cathode ray tube. Short editorial. 1500 w. Elec Wld—March 9, 1907. No. 83015.

## Resistance.

The Variation of Manganin Resistance with Atmospheric Humidity. E. B. Rosa and H. D. Babcock. Read before the Am. Phys. Soc. It has been noticed that manganin resistances change their value regularly with the time of year. Shows that this change is due to variations of humidity. 2800 w. Elect'n, Lond—June 14, 1907. No. 85240 A.

The Variation of Manganin Resistances with Atmospheric Humidity. W. Jaeger and St. Lindeck. A criticism of state-

## ELECTRO-PHYSICS

ments made by Messrs. Rosa and Babcock in an earlier paper. 1200 w. Elect'n, Lond—Aug. 2, 1907. No. 86360 A.

The Resistivity-Temperature Coefficient of Metals. Harold Pender. The object of the note is to put into convenient form for easy calculation the ordinary formula for the change in the resistivity of copper with the change in temperature. 300 w. Elec Wld—April 13, 1907. No. 83719.

## Rheostats.

Notes on Rheostat Design. F. D. Hallcock. Considers points of interest in the design of rheostats employed in series circuits, and in shunt circuits. 2000 w. Elec Jour—Feb., 1907. No. 82492.

## Rontgen Rays.

A Screen for Röntgen Rays which Retains the Image (Ein Röntgen-Schirm mit Deutlichen Nachbildern). Dr. Danneberg. Description of a screen coated with a modified form of zinc sulphide, which has many advantages for the direct observation of Röntgen ray images. 500 w. Elektrotech Zeitschr—Nov. 1, 1906. No. 80660 B.

The Roentgen Ray and Its Uses. E. W. Caldwell. Reviews some of the results accomplished, giving a statement of the appliances and methods used. 2200 w. Elec Rev, N Y—March 9, 1907. No. 82878.

## Thermo-Couples.

The Thermoelectromotive Forces of Potassium and Sodium with Platinum and Mercury. Harold C. Barker. Deals with the measurement of the thermoelectromotive forces of potassium-platinum and sodium-platinum couples for varying temperatures. 2000 w. Am Jour of Sci—Aug., 1907. No. 86023 D.

## Transformer.

Resonance Transformer (Der Resonanz Transformator). Gustav Benischke. Mathematical paper. Diagrams. 1300 w. Elektrotech Zeitschr—Jan. 10, 1907. No. 83229 B.

## Vibrations.

The Superposition of Mechanical Vibrations (Electric Oscillations) upon Magnetization, and Conversely, in Iron, Steel and Nickel. James Russell. An account of investigations on the subject. 3300 w. Elect'n, Lond—July 5, 1907. No. 85585 A.

## Vibrations

# ELECTRICAL ENGINEERING

## GENERATING STATIONS

### Azores

#### Azores.

Electricity in the Azores. Illustrated description of the three hydro-electric stations which furnish electricity for lighting and power. 1200 w. Engr, Lond—Aug. 30, 1907. No. 86875 A.

#### Balancing.

The Balancing of the Greenwich (L. C. C.) Engines. W. E. Dalby. Gives facts concerning the vibrations produced by the engines installed, taken from the report of the Committee appointed to inquire into the working of the generating station at Greenwich, in its relation to the Royal Observatory. 1700 w. Prac Engr—March 1, 1907. No. 82885 A.

#### Beznau.

Electric Power Station at Beznau on the Aar (Elektrizitätswerk Beznau an der Aare Anlage für die Erzeugung elektrischer Energie). Comprehensive description of a large combined hydraulic and steam plant in Switzerland. Illus. Serial. 7 parts. 10000 w. Schweizerische Bauzeitung—Feb. 9, 16 and 23, March 2, 16, 23 and 30, 1907. No. 83632 each B.

#### Blast Furnace Gas.

The Economic Distribution of Electric Power from Blast Furnaces. B. H. Thwaite. Read before the Ir. & St. Inst. at Vienna. Describes an application of the pooling system proposed by the writer. Ills. 3500 w. Mech Engr, Lond—Sept. 28, 1907. No. 87509 A.

#### Breakdowns.

On the Prevention of Breakdowns in Central Stations. An explanation of methods used by the writer for keeping the number of interferences with the supply of electricity down to the minimum. 2500 w. Elec Rev, Lond—Feb. 8, 1907. No. 82454 A.

Breakdowns of Electrical Machinery. Llewellyn Foster. Read before the Manchester Sec. of the Inst. of Elec. Engrs. Calls attention to the commoner forms of breakdown occurring more particularly in continuous-current machines. Considers the stationary parts carrying current, and not carrying current; and the moving parts carrying, and not carrying current. 3800 w. Mech Engr—March 9, 1907. No. 83105 A.

#### Card Records.

Notes on a Central Station Card Record System. George W. Martin. Describes the manner in which the United Electric Light and Power Company, of New York, keeps track of its customers and the apparatus used by them. 2000 w. Elec Wld—April 6, 1907. No. 83494.

### Central Stations

#### Central Stations.

Recent Developments in Large Central Electric Plants. Thomas C. McBride. A review of progress dealing only with the more important details, especially with those that aim at lessening the cost of production and distribution. General discussion. 11000 w. Pro Engrs' Club of Phila—April, 1907. No. 84523 D.

A Progressive Suburban Central Station at Revere, Mass. Illustrates and describes a power plant developed under unusual load requirements, in a suburban territory. 2200 w. Elec Wld—Aug. 3, 1907. No. 86146.

Electric Power Plant at Lansford, Pennsylvania. W. E. Joyce. Illustrated description of a new plant costing \$1,000,000, built to supply 16 coal mines with power, and for other uses. 2000 w. Eng & Min Jour—Aug. 24, 1907. No. 86554.

General Tendencies in Central Station Practice. Frank Koester. Reviews features in the design and construction of power plants and their equipment, and the economical operation. 2000 w. Elec Rev, N Y—Jan. 12, 1907. No. 81595.

Technical Graduates and Central Stations. Prof. George D. Shepardson. Presents some of the reasons why so few technical graduates are connected with central stations. 1400 w. Elec Wld—Jan. 5, 1907. No. 81502.

The Design of a 1500 to 3000-kilowatt Steam-Electric Central Light and Power Plant. Frank Koester. Brief discussion of the questions involved in the design of a small plant. Ills. 4000 w. Elec Rev, N Y—April 20, 1907. Serial. 1st part. No. 83839.

A Most Economical System for Generation of Current. Illustrates and describes a reconstructed station at Lockport, N. Y., where a system of underground steam heating is installed, which utilizes all the heat in exhaust steam and most of that in the flue gases. 2200 w. Engr, U S A—May 15, 1907. No. 84404 C.

New Power Plant of the Potomac Electric Power Co. of Washington, D. C. Illustrated detailed description of a recently completed 10,000-kw. plant having a concrete building and steam-turbine units. 3500 w. Engr Rec—March 16, 1907. No. 83072.

Potomac Electric Power Company's New Plant. C. H. Claudy. Illustrated description of a large steam-turbine station of interesting design, concrete-block construction, erected at Washington, D. C. 2500 w. Power—May, 1907. No. 83860 C.



# ELECTRICAL ENGINEERING

## Central Stations

Operating Features of the Fifty-ninth Street Station of the Interborough Rapid Transit Company. Describes the operation of a station built on the unit system. 3500 w. St Ry Jour—Oct. 12, 1907. No. 87781.

The Long Island City Power Station. A. D. Williams, Jr. An illustrated detailed description of one of the stations which will furnish power to operate the Pennsylvania R. R. tunnel under New York City. 3800 w. Engr, U S A—March 15, 1907. No. 83092 C.

A 100,000-Kilowatt Steam-Turbine Station. J. C. Thorpe. Illustrated detailed description of the Fisk Street station, Chicago, which has the largest steam-generating plant yet projected. 5000 w. Power—Dec., 1906. No. 80997 C.

Recent Developments in Steam Turbine Power Station Work, with Special Reference to the Fort Wayne & Wabash Valley Traction Company Spy Run Station. J. R. Bibbins. Describes a particular design of station for steam turbine power, the construction and operation. Ills. 6800 w. St Ry Jour—Oct. 19, 1907. No. 87818.

The Park Royal Generating Station of the Great Western Railway, London. Illustrated description. 3200 w. Elec Wld—Oct. 19, 1907. No. 87803.

The Stratford Power Station of the Great Eastern Railway. Illustrated description of this modern turbo-generating plant. 2500 w. Elec Rev, Lond—July 12, 1907. No. 85863 A.

Spring Street Station of the Columbus Railway and Light Company. Illustrates and describes a 6,500 kw. station for railway service. 1500 w. Engr, U S A—Oct. 15, 1907. No. 87731 C.

Gas-Power Central Station of the Duquesne Light Co., Pittsburg, Pa. Norman C. MacPherson. Read before the Pittsburg Branch of the A. I. E. E. Detailed description of the equipment and operation. 4000 w. Eng Rec—Oct. 26, 1907. No. 87938.

Report on a Combined Refuse Destructor and Electric Lighting Plant for East Orange, N. J. Abstract of a report made by Henry Floy. Gives a statement showing the effect of refuse destructor heat utilization upon the fuel bill of an electric lighting station, and the effects of a combination of garbage and rubbish, compared with garbage, rubbish, and ashes under the conditions given. 2500 w. Eng News—Jan. 24, 1907. No. 81769.

The New Power Plant of the Lowell (Mass.) Electric Light Corporation. Illustrated description of the new turbine

## GENERATING STATIONS

## Charges

power station under construction. 2200 w. Elec Wld—Oct. 5, 1907. No. 87485.

A Central Power Station in the White-wood, S. D., Mining District. Illustrates and describes a plant at Deadwood, built to supply electric current for power in the mines and mills in its vicinity, and for lighting in Deadwood, Lead and other camps. 1800 w. Eng Rec—Sept. 28, 1907. No. 87311.

Power Plant of the Gulfport and Mississippi Coast Traction Co. Earl F. Scott. Illustrated description of a plant designed to furnish light and power for several towns and for interurban electric traction. 2200 w. Eng Rec—Oct. 19, 1907. No. 87787.

A Small Central Station in Nebraska. Jas. A. Ward. Illustrated detailed description of an electric light plant for a place of about 1000 inhabitants. 2500 w. Elec Wld—March 30, 1907. No. 83350.

Equipment for the Pacific Light & Power Co.'s Plant. Illustrates and describes horizontal vertical-compound engines with surface condensers, driving alternating-current generators. 2500 w. Engr, U S A—July 1, 1907. No. 85371 C.

A Modern Central Station (Ein Modernes Elektrizitätswerk). Dr. Müllendorff. Illustrates and describes the steam-turbine station of the city of Eberswalde, Germany. 3500 w. Glasers Ann—Sept. 1, 1907. No. 87637 D.

Friedenau Electric Power Station (Das Elektrizitätswerk der Gemeinde Friedenau bei Berlin). Max Mulertt. A station operated by two Diesel engines of 300 h. p. each. Ills. 1400 w. Elektrotechnische Zeitschrift—Feb. 7, 1907. No. 82959 B.

The New Turbine Power Station of the Dallas Electric Corporation. Illustrated detailed description. 2500 w. St Ry Jour—May 18, 1907. No. 84371.

The Kent Electric Power Company. Illustrates and describes the generating plant of this company, at Frindsbury. 1500 w. Elect'n, Lond—May, 1907. Serial. 1st part. No. 84438 A.

See also England, Fuel, Geneva, Johnstown, Pa.; London, Marylebone, Municipal, Neasden, N. Y. Central, Paris, Oil-Engine-Driven, Rio de Janeiro, Rome, Rutland, Vt.; Sydney, N. S. W.; United States, Waltham, and Washington, D. C., under GENERATING STATIONS; and Long Island R. R., New York Central R. R., Power Plants, and West Jersey and Seashore R. R., under STREET AND ELECTRIC RAILWAYS.

## Charges.

Graphical Method of Estimating Cost

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## Charges

## GENERATING STATIONS

## Economics

of Electrical Energy (Graphische Ermittlung der Gestehungskosten elektrischer Energie). Karl Kramar. Exposition of a graphical method for estimating costs per k. w. hour. Ills. Tables and diagrams. 1800 w. Elektrotechnik und Maschinenbau—Dec. 23, 1906. No. 81814 D.

Systems of Charging for Electricity Supply. W. A. Toppin. Considers the different systems of charging in general use, comparing their advantages and disadvantages, and explains a system worked out by the writer. 3000 w. Elec Engr, Lond—Jan. 11, 1907. No. 81731 A.

Rates of Charge for Electricity and Their Effect on Cost. J. S. Codman. Read before the Boston and Cornell Branches of the Am. Inst. of Elec. Engrs. Describes the load-factor system and the modifications which represent the best present practice; also methods of determining the customer's maximum demand and consumption. 8500 w. Pro Am Inst of Elec Engrs—April, 1907. No. 84508 D.

Tariffs from Electric Motive Power. A. C. Hanson. An examination of some of the methods of charging for electrical energy used for motive power purposes. 1800 w. Elec Rev, Lond—April 26, 1907. No. 84247 A.

Modern Methods of Selling Electrical Energy (Tarifications Modernes). Gaston Rosenwald. Discusses the various systems used by Central Stations and describes the leading types of meters employed. Ill. 7500 w. Soc Belge d Elec'ns—April, 1907. No. 84101 F.

The Principles of Modern Rate-Making for Electric Light and Power. Gives an analysis of the cost of supplying different classes of business, and explains several systems in use. 6000 w. Elec Wld—June 1, 1907. No. 84723.

Methods of Computing Central Station Rates in Boston. An explanation of the method of computing rates used by the Edison Electric Illuminating Company. 2000 w. Elec Wld—June 1, 1907. No. 84724.

The Present Tendency of Charging for Electricity. W. A. Toppin. Remarks on the many changes being made in the system of charging in English towns, and suggests that an effort be made to secure uniformity. 1500 w. Elec Rev, Lond—June 7, 1907. No. 85104 A.

Cheap Power Supply by Municipalities. C. E. S. Shawfield. Discusses some of the general principles involved in the problem of cheap power supply. 3000 w. Elec Engr, Lond—June 28, 1907. No. 85495 A.

✓ The Costs of Electricity Supply and Their Relation to Scales of Charges. H. R. Burnett. Read before the Incor. Munic. Elec. Assn. Describes the method adopted by the writer for ascertaining the costs of supply and the manner of applying the information in fixing the scale of charges. 3500 w. Elec Engr, Lond—July 5, 1907. No. 85580 A.

✓ Electric Power Tariffs. C. S. Vesey-Brown. Considers the charges made by hydro-electric and steam generating plants, analyzing the different tariffs in operation. 2000 w. Cassier's Mag—Aug., 1907. No. 86007 B.

✓ Some Fundamental Principles Underlying the Sale of Electrical Energy. Clarence P. Fowler. Discusses the main features upon which rates should be based, illustrating by an example. 3000 w. Elec Wld—Sept. 7, 1907. No. 86845.

The Sale of Electricity for Lighting Purposes Commercially Considered. L. E. Buckell. Suggestions for electric light salesmen, based on conditions in England. 1500 w. Elec Engr, Lond—Sept. 13, 1907. No. 87180 A.

## Coal Handling.

Coal Handling and Condensing Equipment in the Gold Street Station of the Edison Electric Illuminating Company of Brooklyn. An illustrated description of the condensing apparatus and coal and ash handling machinery. 3500 w. Elec Wld—June 15, 1907. No. 85071.

## Condensers.

High-Voltage Condensers. C. L. Durand. Explains the advantages of the use of condensers, their applications and features. Ills. 1500 w. Elec Rev, N Y—Feb. 16, 1907. No. 82407.

## Construction.

Modern Power Station and Electrical Construction. W. A. Haller. Deals especially with the constructional features pertaining to the installation of turbo-generators and their supplementary apparatus. Ills. General discussion. 6000 w. Jour Assn of Engng Socs—Sept., 1907. No. 87862 C.

See Reinforced Concrete, under CIVIL ENGINEERING, CONSTRUCTION.

## Depreciation.

See same title, under INDUSTRIAL ECONOMY.

## Economics.

The Revenues of Electric Stations in Medium and Small Sized Towns (Die Erträge von Elektrizitätswerken in Mittleren und Kleinen Städten). G. Dett-

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## Economics

mar. A discussion of the finances and commercial end of electric stations in Germany, based on extensive statistics. Tables. Serial. 2 parts. 75000 w. *Elektrotech Zeitschr*—Oct. 18 and 25, 1906. No. 80652 each B.

How to Make a Small Electric Plant Pay. D. F. McGee. Describes the methods adopted to make an electrical property, operated in a town of 5,000 inhabitants, pay a dividend. 2300 w. *Cent Sta*—Nov., 1906. No. 80379.

The Revenues of Electric Stations in Large Cities and the Influence on Them of Furnishing Current to Railways (*Die Erträge von Elektrizitätswerken in Grosseren Städten und Ihre Beeinflussung durch Stromlieferung für eine Bahn*). G. Dettmar. Discussion of statistics of a large number of stations, and comparison with results from small stations, given in a previous article. Tables. 2500 w. *Elektrotech Zeitschr*—Nov. 29, 1906. No. 81160 B.

Central Station Supply Economics; Their Study, and What It Promises in the Way of Cheaper Supply. A. M. Taylor. Paper read before the Birmingham Loc. Sec. of the Inst. of Elec. Engrs. Gives a method of separating running charges from fixed charges, showing how to divide the costs. Considers the effect of internal diversity factor, and suggests a method of using accumulators. 7700 w. *Elect'n, Lond*—Feb. 22, 1907. No. 82826 A.

Upkeep Charges on Large Electric Generating Sets. Henry Robert John Burstall and John Somerville Highfield. Read at Engng. Con. of the Inst. of Civ. Engrs. Aims to draw out information as to the differences which may exist in the charges necessary to cover repairs and maintenance. Discussion. 1800 w. *Elec Engr, Lond*—June 21, 1907. No. 85384 A.

The Financial Side of the Central Station. A. D. Williams, Jr. Outlines some of the elements affecting the fixed charges and operating expenses, computing approximately what the fixed charges would be upon an investment. 2500 w. *Elec Wld*—Aug. 3, 1907. No. 86148.

## England.

The Windsor, Slough, and Datchet Electricity Supply Undertakings. Reviews the main features of the undertakings, describing the machinery used in the different stations, and showing the progress. 1000 w. *Elec Engr, Lond*—June 7, 1907. Serial. 1st part. No. 85099 A.

## Exciters.

The Operation and Care of Exciters. A. E. Buchenberg. Practical suggestions

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on how to detect and remedy exciter troubles. 1200 w. *Engr, U S A*—Dec. 15, 1906. No. 81052 C.

Exciter Troubles. A. E. Buchenberg. Diagram and general discussion of the difficulties and troubles which may arise in the operation of direct-current machines when used as exciters for alternators. 3000 w. *Elec Wld*—May 4, 1907. No. 84206.

Some Notes on the Excitation of Power Units. Discusses direct-current generators, and alternators, and methods of excitation. 1500 w. *Elec Rev, Lond*—Sept. 13, 1907. No. 87205 A.

## Fuel.

Fuel Economy. H. B. Maxwell. Read before the Glasgow Sec. of the Inst. of Elec Engrs. Deals principally with the steam plant of an electric generating station, but the general principles are applicable to all steam plants. Considers the requirements to obtain the utmost economy are one economizer, air-heating, no chimney, an induced-draft fan and live-steam heating of the feed. 5000 w. *Elec Engr, Lond*—Jan. 1, 1907. No. 81735 A.

## Gas vs. Steam.

Suction Gas v. Steam. Compares two generating stations of similar size, and with units of the same size installed, showing an advantage in favor of steam. 1200 w. *Elec Rev, Lond*—Nov. 16, 1906. No. 80718 A.

## Generating Stations.

See also under Street and Electric Railways.

## Generators.

Introduction to Discussion on the Practicability of Large Generators Wound for 20,000 Volts. B. A. Behrend. Principally a consideration of steam-turbine generators for large capacity, 7,500 kw. to 15,000 kw. and above. 1000 w. *Pro Am Inst of Elec Engrs*—Feb., 1907. No. 83050 D.

## Geneva, Switzerland.

The Reserve and Emergency Station of the City of Geneva (*Usine de Réserve et de Secours de la Ville de Genève*). M. Elmer. Illustrates and describes a secondary steam installation at the Chèvres hydro-electric station, made necessary by the large fluctuations in the River Rhone. 2000 w. *Bull Tech d l Suisse Rom*—July 10, 1907. No. 86204 D.

## Germany.

Statistics of Electric Power Plants in Germany (*Statistik der Elektrizitätswerke in Deutschland*). Gives the essential de-

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tails of over 1,600 electric power plants, either in operation or under construction, location, purpose, motive power, machines, capacity, etc. 75000 w. *Elektrotech Zeitschr*—April 18, 1907. No. 84173 D.

## Hungary.

Electric Power Plants in Austro-Hungary (*Die Starkstrom-Industrie in Oesterreich-Ungarn*). Emil Honigmann. Enumeration of all the important Hungarian plants, with tables giving particulars of kind of prime mover employed, kilowatts capacity, kind of service furnished, etc. Serial. 2 parts. 5200 w. *Elektrotechnische Zeitschrift*—March 7 and 14, 1907. No. 83648 each B.

## Hydro-Electric.

Winnipeg, Manitoba, 60,000-Volt Hydro-Electric Plant. V. D. Moody. Illustrated detailed description of a recently completed plant representing the most modern construction. 3500 w. *Can Elec News*—Nov., 1906. No. 80452.

Water Power Electrical Development in the Carolinas. J. C. Patton. An illustrated article giving information concerning developments for generating 150,000 electrical horse-power to cover a territory 150 miles in length, and 100 miles in width. 1200 w. *Elec Wld*—Nov. 10, 1906. No. 80378.

Electric Power Transmission. Frederick Darlington. A discussion of the qualities that chiefly affect the value of water powers, and the classes of loads to which they are applied, their development, etc. 2500 w. *Pro Am Inst of Elec Engrs*—Jan., 1907. No. 83025 D.

Hydro-Electric Developments at Huntingdon, Pa. Illustrates and describes two plants under construction by the Juniata Hydro-Electric Co., which will form part of an important electric transmission system. 3000 w. *Elec Wld*—Dec. 22, 1906. No. 81216.

Hydro-Electric Power Station at Wangen. Illustrated description of an high-tension installation erected along the course of the river Aare, in the Canton of Berne. 1800 w. *Engr, Lond*—Nov. 30, 1906. No. 80929 A.

North Wales Power Company. Illustrates and describes the first British hydro-electric power scheme. 2700 w. *Elec Engr, Lond*—Dec. 21, 1906. Serial. 1st part. No. 81333 A.

The Entraygues (France) Hydro-electric Plant. C. L. Durand. Illustrated description of a new station utilizing the power of mountain streams in the Alpine region, supplying current for Toulon and villages on the Mediterranean coast. 3000

w. *Elec Rev, N Y*—Dec. 8, 1906. No. 80891.

The Hydro-Electric Plant of the Belton Power Co. George Wrigley. Illustrated description of a generating plant on the Saluda River, S. C. 2200 w. *Eng Rec*—Dec. 15, 1906. No. 80993.

The Snowdon Hydro-Electric Installation of the North Wales Power and Traction Co., Ltd. Illustrates and describes the engineering features of this scheme. 3000 w. *Elec Rev, Lond*—Dec. 7, 1906. Serial. 1st part. No. 81024 A.

The Warriors Ridge Hydro-Electric Plant at Huntingdon, Pa. Illustrates and describes details of a combined hydraulic and steam plant of 8000 horse-power. 4000 w. *Eng Rec*—Dec. 22, 1906. No. 81228.

The Whitney Development on the Yadkin. Julian I. Miller. An illustrated account of an important hydro-electric project being carried out in North Carolina. 2000 w. *Elec Rev, N Y*—Dec. 29, 1906. No. 81305.

Hydro-Electric Plant at Kakabeka Falls, Canada. W. G. Hewson. Illustrated description of a recent Canadian installation designed to supply the town of Fort William with electricity for all purposes. 1800 w. *Elec Wld*—Jan. 26, 1907. No. 81940.

The Hydro-Electric Plant at Kakabeka Falls, Ont. Illustrated detailed description. 2500 w. *Can Elec News*—Sept., 1907. No. 86820.

The Pueblo and Suburban Traction and Lighting Company's Hydro-Electric Plant. Illustrates and describes this plant and hydraulic development of Colorado. 3800 w. *Elec Rev, N Y*—Jan. 26, 1907. No. 81954.

The Roaring Fork Electric Light and Power Company. Illustrated account of the development of this Colorado installation, describing the interesting features. 2500 w. *Elec Rev, N Y*—Jan. 5, 1907. No. 81441.

Recent Hydraulic Power Developments in Switzerland. Enrico Bignami. Illustrates and describes recent hydro-electric installations designed to utilize the power of the River Orbe, which forms the outlet of the lakes of Joux. 2000 w. *Cassier's Mag*—Feb., 1907. No. 82284 B.

Electric Power Canal at Lake Constance (*Les Usines Electriques Du Canal De Derivation du Rhin en amont du lac de Constance*). S. Herzog. Description of water power plants deriving energy from the Rhine between Austria and Switzerland. Ills. 1400 w. *Le Génie Civil*—Jan. 5, 1907. No. 82325 D.

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The Ticino River Hydro-Electric Plants in Italy. Frank C. Perkins. Illustrated descriptions of an interesting modern installation using the latest methods. 1700 w. *Elec Engr*, Lond—Jan. 25, 1907. No. 82138 A.

The Hydro-Electric Plant of the Utica Gas and Electric Company. Illustrated description of this plant in central New York, and its wooden stave pipe line. 900 w. *Elec Rev*, N Y—Feb. 23, 1907. No. 82556.

The St. Louis River Hydro-Electric Plant. Describes a plant under construction in Minnesota to furnish power for working the iron mines in the Missabe range, at 70 miles distance, and to furnish current for light and power to Duluth and also to St. Paul and Minneapolis, 125 miles distant. 2000 w. *Engr*, Lond—Feb. 15, 1907. No. 82611 A.

The Hydro-Electric Development of the Great Northern Power Co. The first of a series of articles giving an illustrated detailed description of this development on the St. Louis River, near Duluth, Minn. 5500 w. *Eng Rec*—Sept. 7, 1907. Serial. 1st part. No. 86785.

Electric Transmission System of the York Haven Water and Power Company. Illustrated description of a large power development on the Susquehanna River. Some of the unusual features are the arrangement of the turbines and the crossing of the river by high-tension cables laid in the river bed. 3500 w. *Elec Wld*—March 2, 1907. No. 82771.

The Highest Hydro-Electric Transmission Plant in the World. Brief illustrated description of the plant for working the Caylloma silver mines, in Peru. 1400 w. *Min Jour*—Feb. 23, 1907. No. 82831 A.

The Hydro-Electric Plant of the Towliga Falls Power Co., Griffin, Ga. Illustrates and describes a water power development by which some 3,000 h. p. are rendered available from a stream having a minimum flow of 100 second-feet. 2500 w. *Eng Rec*—March 9, 1907. No. 82862.

The Shawinigan Hydro-Electric Power Plant. Wallace C. Johnson. An account of the latest developments and extension of the great station at Shawinigan Falls, Canada. Maps and Ills. 2000 w. *Cassier's Mag*—March, 1907. No. 83028 B.

Overcoming Loss of Head from Flooding. Enrico Bignami. An account of experiments at Chevre, near Geneva, for utilizing the unused kinetic energy wasted because of the flood to return to the station part of the energy lost on account of the loss in head. 1500 w. *Engr*, U S A—April 1, 1907. No. 83386 C.

The Hydro-Electric and Water Power Plant of a Large Paper Mill. Illustrates and describes a recently completed large pulp and paper mill in Minnesota on the Mississippi River, especially its power equipment. 3500 w. *Eng Rec*—April 6, 1907. No. 83481.

The Central Station of the Albula (La Centrale Elettrica dell' Albula). Details of this new station for the supply of electrical energy to the city of Zurich. 3000 w. *L'Elettricità*—March 1, 1907. No. 83678 D.

The Sill Power Plant near Innsbruck (Die Sillwerke bei Innsbruck). Comprehensive description of a large hydro-electric plant in Tyrol, Austria. Illus. Serial. 2 parts. *Elektrotechnik und Maschinenbau*—March 24 and 31, 1907. No. 83640 each D.

The Power Plant on the Sill at Innsbruck (Die Sillwerke bei Innsbruck). An illustrated description of this important hydro-electric power plant in the Tyrol which supplies electrical energy for lighting and power purposes in Innsbruck and also for the operation of the Stubai Valley Railway. 2000 w. Serial. 1st part. *Der Elektrotechniker*—June 10, 1907. No. 85649 D.

Power Development on the Kootenay River for the West Kootenay Power & Light Company, Limited. Robert A. Ross and Henry Holgate. Illustrated description of a power development at Upper Bonnington Falls, British Columbia. 3500 w. *Can Soc of Civ Engrs*—May 9, 1907. No. 84396 N.

The Huronian Company's Power Development. Robert A. Ross and Henry Holgate. Illustrated description of the development at High Falls, on the Spanish River, to furnish power for the nickel and copper mines of the Sudbury District. 6000 w. *Can Soc of Civ Engrs*—April 25, 1907. No. 84395 N.

Novel Features of the Huronian Company's Water Power Development. High Falls, Ontario. Brief illustrated description of the dams and constructional features. 1500 w. *Eng News*—July 18, 1907. No. 85731.

The Great Falls Station of the Southern Power Co. Curtis A. Mees and John H. Roddey. Part I gives an illustrated description of the natural power and the hydraulic features of the development. 5000 w. *Eng Rec*—May 18, 1907. Serial. 1st part. No. 84425.

The St. Croix Falls Power Plant. Wadsworth A. Williams. Illustrated description of the water-power development on the St. Croix River, which trans-

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mits current for power and light to Minneapolis, 40 miles distant. 1800 w. Engrs' Soc of Univ of Minn—Year Book, 1907. No. 84633 N.

The Taylor's Falls, Minn., Water-Power Development. An illustrated detailed description of an important water power development on the St. Croix River, which supplies current for lighting and power to Minneapolis and surrounding districts. 2500 w. Eng Rec—June 29, 1907. Serial. 1st part. No. 85319.

Tyrol Hydro-Electric Power Station, Keiserwerke. Illustrates and describes an installation for supplying power for industrial and lighting purposes in the northern part of Tyrol. 1700 w. Elec Wld—May 11, 1907. No. 84310.

The Cazadero Generating Station of the Portland Railway Light & Power Company. An illustrated description of an interesting installation in Oregon, comprising a dam across the Clackamas river, a flume and waterway 1.7 miles long, the generating station and a step-up transformer station. 1100 w. Elec Ry Rev—May 11, 1907. No. 84279.

Water-Power Development at Kardaun near Bozen (Wasserkraftanlage Kardaun bei Bozen). Andreas Stamm. Illustrated detailed description of dam, pipe-line, power house, turbines, generators, etc., at this plant in the Tyrol. 3000 w. Serial. 2 parts. Zeitschr f d Gesamte Turbinenwesen—April 10 and 20, 1907. No. 84157 each D.

The Pöls Power Plant (Die Pölswerke). Philipp Ehrlich. Illustrated description of an Austrian hydro-electric power plant generating 1,100 horse power. 2000 w. Zeitschr d Oest Ing u Arch Ver—April 26, 1907. No. 84180 D.

The Development of the McCall's Ferry Power Company. Day Allen Willey. An illustrated outline of this project for utilizing the water of the Susquehanna River. The dam under construction is one of the most extensive in the world. 2000 w. Elec Rev, N Y—June 1, 1907. No. 84717.

The Hydro-Electric Power Development of the McCall Ferry Power Co. H. T. Herrick. Brief illustrated account of the construction of this dam on the Susquehanna River, and the power plant. 1000 w. Purdue Engng Rev—1907. No. 85936 N.

The Hydro-Electric Plant of the McCall Ferry Power Co. Illustrated detailed description of the design and methods of construction for a plant with a nominal capacity of 100,000 h. p. 6500 w. Eng Rec—Sept. 21, 1907. No. 87153.

The McCall Ferry Hydro-Electric

Power Plant on the Susquehanna River. Illustrated detailed description of the construction of this large plant, and the methods of carrying out the work. The whole plant is essentially a concrete structure. 7500 w. Eng News—Sept. 12, 1907. No. 87000.

The Trezzo D'Adda Electric Power Station. Illustrated description of this Italian station and its equipment. 1600 w. Engng—Feb. 8, 1907. No. 82466 A.

The Hydro-Electric Plant at Trezzo d'Adda (L'Impianto Idroelettrico di Trezzo d'Adda). An illustrated description of one of the largest Italian plants. 1500 w. L'Elettricità—May 10, 1907. No. 84919 D.

The Hydro-Electric Plant at Trezzo on the Adda (L'Impianto Idro-Elettrico di Trezzo sull'Adda). An illustrated detailed description of this plant, the first part discussing the dam and other hydraulic works. 2700 w. Serial. 1st part. Il Monit Tec—July 20, 1907. No. 86218 D.

The Generating Station at Beznau, Switzerland (Usine Electrique de la Beznau, Suisse). P. Chignaterie. An illustrated description of the hydraulic, steam and electrical equipment of this hydro-electric plant on the Aar which has a subsidiary steam-turbine installation. 2000 w. Génie Civil—May 4, 1907. No. 84906 D.

Hydraulic Development at West Buxton, Me. Illustrated description of a hydraulic plant on the Saco River involving the construction of a dam, a power house, a dynamo house, a boom, a log-chute, and a tail race. Current to be transmitted to Portland. 2200 w. Eng Rec—July 27, 1907. No. 85948.

Method of Construction of the Water Power Plant on the Chicago Drainage Canal. LeRoy K. Sherman. Illustrated description of this hydro-electric development of 36000 h.p. now nearing completion. 1500 w. Engng-Con—July 3, 1907. No. 85438.

The Hydro-Electric Plant of the Vancouver Power Co. Detailed description of a plant supplying power for electric lighting, street railways, and commercial purposes in Vancouver, B. C., and surrounding towns. 2500 w. Eng Rec—July 13, 1907. No. 85542.

The Nine-Mile Power Station of the Spokane & Inland Empire Railway. H. Cole Estep. Illustrations, with description of the method of construction, and the design. 1200 w. Eng Rec—July 20, 1907. No. 85792.

The Water and Electric Power Systems of the Portland Railway Light and Power Company, Portland, Oregon. W.

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## Hydro-Electric

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## Isolated Plants

P. Hardesty. An illustrated article describing briefly the older portions of this system, and in detail, the latest addition. 7000 w. Eng News—June 27, 1907. No. 85299.

The Electrical Plants on the Traun and in St. Wolfgang (Das Traunfallwerk und die Elektrizitätswerke in St. Wolfgang). Illustrated detailed description of these power stations and transmission systems in Austria. 2500 w. Elektrotech u Maschinenbau—June 30, 1907. No. 85663 D.

Power Plant Inside of a Dam on the Patapsco River. Illustrated description of a recently completed plant near Ilchester, Md., which is entirely submerged, the same structure serving as dam and power house. 1500 w. Elec Wld—Aug. 3, 1907. No. 86145.

The Caffaro Electric Power Station. Illustrates and describes the utilization of this Alpine stream to develop power for Brescia and neighboring districts. 1200 w. Engng—Aug. 9, 1907. No. 86468 A.

The Caffaro Hydro-Electric Plant (Ancora dell' Impianto Idroelettrico del Caffaro). S. Herzog. Illustrated detailed description of this Italian plant. 2100 w. Serial. 1st part. L'Industria—Sept. 15, 1907. No. 87613 D.

The Kern River No. 1 Power Plant of the Edison Electric Co., Los Angeles. C. W. Whitney. An illustrated detailed description of interesting features of this high-head long-distance transmission plant. 6500 w. Eng Rec—Aug. 10, 1907. Serial. 1st part. No. 86314.

The Hydro-Electric Plant of the Canadian Niagara Power Company. A brief illustrated description of the plant and its operation. 3000 w. Can Elec News—Sept., 1907. No. 86822.

The Brusio Hydro-Electric Plant and the Transmission of Power in Lombardy (Impianto Idroelettrico di Brusio e Trasporto di Forza in Lombardia). An illustrated description of an interesting plant in Italy, the construction of which was much complicated by its inaccessibility. 2000 w. Serial. 1st part. Elettricità—Aug. 16, 1907. No. 86901 D.

Hydro-Electric Plants on the Mediterranean Coast (Installations Hydro-Electriques de L'Energie Electrique du Littoral Méditerranéen). E. de Marchena. Illustrates and describes power plants and transmission lines in the southern part of France. 12000 w. Mem Soc Ing Civ de France—July, 1907. No. 86911 G.

The Central Station of the Société du Gaz et de l'Electricité, of Nice, France. C. L. Durand. Illustrated description of a steam turbine plant of considerable size.

2500 w. Elec Rev, N Y—Aug. 10, 1907. No. 86327.

Hydro-Electric Power Developments in France (Les Usines Hydro-Electric en France). G. de Lamarcodie. An article descriptive of the immense development of electrical energy from water powers, outlining the uses to which it is put in the several parts of the country. Ills. 8000 w. Rev Gen d Sci—Aug. 30, 1907. No. 86920 D.

Three Low-Head Hydro-Electric Developments in Michigan. Illustrates and describes hydro-electric developments of the Grand Rapids-Muskegon Power Co. in the southern and western part of Michigan. 7500 w. Eng Rec—Oct. 19, 1907. Serial. 1st part. No. 87783.

Loch Leven Water Power Works. Illustrated description of a scheme to furnish electric power for the manufacture of aluminium. 1000 w. Engr, Lond—Oct. 4, 1907. No. 87597 A.

Recent Water-Power Plants in Switzerland (Neue Wasserkraftanlagen der Schweiz). S. Herzog. A series of articles illustrating and describing a number of hydro-electric developments, the first being a plant on the Rabiusa at Chur. 2000 w. Serial. 1st part. Zeitschr f d Gesamte Turbinenwesen—Sept. 10, 1907. No. 87636 D.

See also Beznau, Niagara, Rhine, Water Power, Yellowstone, and Zambesi River, under GENERATING STATIONS; Ice Problem, under CIVIL ENGINEERING, CONSTRUCTION; and Dams, Penstock, and Reservoirs, under CIVIL ENGINEERING, WATER SUPPLY.

## Isolated Plants.

A Combined Heating and Lighting System at Canton, Ohio. R. W. Hutchinson, Jr. Illustrated description of the power house and central heating station, with explanation of details. 2000 w. Elec Rev, N Y—Nov. 10, 1906. No. 80380.

Electricity in the Government Buildings in Washington, D. C. Illustrated description of the present electrical equipments of the government buildings and the uses to which electricity is applied, with an account of a proposed central station to supply current. 5000 w. Elec Wld—June 8, 1907. No. 84847.

New Power Plant for Legislative Group of Buildings in Washington, D. C. Short illustrated description of a central plant to supply electricity for a group of buildings on Capitol Hill. 1000 w. Elec Wld—June 1, 1907. No. 84848.

Regulation in Isolated Plants. Dr. Louis Bell. Gives records of voltage tests made

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## Isolated Plants

on four typical isolated plants, and also a voltage curve from central station service, with comments. 1200 w. Elec Wld—March 2, 1907. No. 82772.

The Central Power Station at the Plant of Walter Baker & Co., Ltd. Illustrated description of a plant for supplying power for a group of buildings, showing the economy of electric distribution. 3000 w. Eng Rec—April 20, 1907. No. 83836.

The Central Station for Heating, Light, and Power at Glen Eyrie. Konrad Meier. Plan and description of the plant on a country estate near Colorado Springs, Colo. 5500 w. Eng Rec—April 27, 1907. No. 83941.

Cleveland Arcade Electrical Plant. A recently completed plant for office building purposes, containing unusual features, is illustrated and described. 3000 w. Elec Wld—July 20, 1907. No. 85846.

Electrical Equipment of the Hall of Records in Manhattan Borough, New York City. Illustrated detailed description of the power plant, distribution of circuits, and features of illumination. 3000 w. Elec Wld—July 27, 1907. No. 85957.

The Electric Light and Power Plant in the "Warehouse of the West" in Berlin (Die Elektrische Licht- und Kraftanlage im "Kaufhaus des Westens" zu Berlin). R. Zaudy. Illustrates and describes a plant of about 650 horse-power. 2500 w. Elektrotech Zeitschr—Sept. 26, 1907. No. 87660 D.

## Johnstown, Pa.

Power Stations of the Citizens Light, Heat and Power Company of Johnstown, Pa. Illustrates and describes two stations, one a direct-current station supplying current and also exhaust steam for heating; the other a turbine-driven station supplying alternating-current. 2500 w. Elec Wld—Jan. 5, 1907. No. 81498.

## Lagging Currents.

Synchronous Motor Compensation for Lagging Currents. Clarence P. Fowler. Discusses the effects of lagging wattless currents on power station equipment and on the supply circuits. 4000 w. Elec Wld—Aug. 10, 1907. No. 86338.

## Lightning Arresters.

See same title, under TRANSMISSION.

## Loads.

A Suggestion for the Improvement of the Small Power Load. H. S. Hatfield. Considers the sub-meter system, illustrating and describing a type of meter. 1000

## GENERATING STATIONS

## Marylebone

w. Elect'n, Lond—Sept. 13, 1907. No. 87207 A.

## London.

London's Electrical Supply. A short résumé of the history. 1800 w. Elec Rev, Lond—Jan. 4, 1907. No. 81638 A.

Electric Power Supply in London. R. L. Pearson. Information relating to this subject, describing in detail some of the extensions of plant recently made and giving a résumé of the earlier features of the undertakings, showing progress of electrical energy supply for power purposes. Ills. 2000 w. Elect'n, Lond—Feb. 1, 1907. Serial. 1st part. No. 82247 A.

The Electrical Power Supply of London. C. S. Vesey-Brown. Explains the difficulties encountered, giving a brief review of the establishment of electrical supply as far as it concerns London, proper, and discussing proposed schemes. 6000 w. Cassier's Mag—April, 1907. No. 83333 B.

The New Power Station of the South Metropolitan Electric Light and Power Co. Briefly considers power supply in London, and gives an illustrated description of the modern turbine station recently erected at East Greenwich. 2200 w. Elec Rev, Lond—Aug. 2, 1907. No. 86358 A.

London's Electricity Supply. Explains conditions in London and briefly discusses the schemes proposed at different times and rejected. 2800 w. Engr, Lond—Sept. 27, 1907. No. 87526 A.

## Management.

Some Phases of Smaller Central Station Management. Abstract of a paper by H. H. Scott, read at meeting of the N.-W. Elec. Assn. Deals with the physical and commercial departments, and points leading to the development of the highest efficiency and economy. Also short discussion. 2500 w. Elec Wld—Jan. 26, 1906. No. 81945.

Notes on Hydro-electric Plant Organization and Operation. Farley Osgood. Discusses the hydraulic power-station, and line departments and the organization of the personnel of an operating system. 8500 w. Pro Am Inst of Elec Engrs—April, 1907. No. 84512 D.

## Marylebone.

The Marylebone Municipal Electrical Undertaking. Briefly reviews the history of this undertaking and gives an illustrated detailed description of the station, plant, etc. 3500 w. Elec Rev, Lond—Jan. 18, 1907. No. 81984 A.



# ELECTRICAL ENGINEERING

## Municipal

## GENERATING STATIONS

## Power-Factor

### Municipal.

The Municipal Electric Plant at The Hague (De Gemeentelijke Electriciteits-fabriek te 's-Gravenhage). N. J. Singels. An illustrated description of the design and equipment of this large municipal generating station with details of operation and costs. 4500 w. De Ingenieur—June 1, 1907. No. 85689 D.

South Norwalk Municipal Electric Works. Illustrated description of a successful plant in Connecticut which furnishes power for street and commercial lighting. 2000 w. Munic Jour & Engr—Feb. 6, 1907. No. 82171 C.

A Successful Municipal Lighting and Power Plant. Describes the plant at South Norwalk, Conn., giving an account of its history, development and growth. Ills. 2500 w. Elec Wld—April 6, 1907. No. 83493.

The Cleveland Municipal Electric Lighting Plant. Illustrated detailed description of a new plant in service since March. 1500 w. Elec Rev, N Y—June 15, 1907. No. 85070.

### Neasden.

The Generation of Power at Neasden. A statement of the technical and economic results of the working of this station of the Metropolitan Railway, describing the methods. 4000 w. Engr, Lond—March 1, 1907. No. 83003 A.

### New Machinery.

New Electric Machines and Appliances (Neuere Elektrische Maschinen und Geräte). K. Meyer. Illustrates and describes recent types of machinery developed by the Siemens-Schuckert Company, including armatures, turbo-dynamos, transformers, switches, etc. 6000 w. Zeitschr d Ver Deutscher Ing—June 1, 1907. No. 85676 D.

### Niagara.

Power Development at Niagara Falls (Utilisation des Chutes du Niagara). Henry Arban. Describes the generating stations, distribution systems and transmission lines of the Niagara Falls Power Company and the Ontario Power Company. Ills. 3500 w. Soc Belge d'Elec—Feb., 1907. No. 82989 F.

### N. Y. Central.

Port Morris Power Station of the New York Central Railroad. A. D. Williams, Jr. Illustrated description of a turbine station arranged on the unit system, with special hydraulic governing and complete facilities for handling coal and ash. 4800 w. Engr, U S A—Nov. 15, 1906. No. 80434 C.

### Oil-Engine Driven.

Oil-Engine Driven Power Plant of the Pittsfield Electric Company. Illustrated description of a plant driven by Diesel engines. 1500 w. Elec Wld—Sept. 7, 1907. No. 86842.

### Oiling System.

An Oiling System in a Large Power Plant. Plan and description of the lubricating-oil circulating system in the Long Island City power station of the Pennsylvania R. R. 700 w. Elec Age—July, 1907. No. 85837.

### Operation.

Suggestions for the Power House Operator. Arthur B. Weeks. Remarks on the importance of self-control in emergencies, and of originality and thorough understanding of the apparatus. 1000 w. Elec Wld—May 4, 1907. No. 84210.

### Parallel Operation.

Parallel Operation of Direct-Current Generators. J. C. Hail. Considers shunt-wound generators connected in parallel, and compound wound generators in parallel operation. Diagrams. 2000 w. Elec Age—May, 1907. No. 84622 C.

The Influence of Damping on the Parallel Operation of Alternating-Current Machines (Der Einfluss der Dämpfung auf die Schwingungsvorgänge in Parallel Geschalteten Wechselstrommaschinen). Fritz Emde. A mathematical discussion. Ills. 4800 w. Elektrotech u Maschinenbau—Sept. 22, 1907. No. 87634 D.

Reactions Between Compound-Wound Generators Operating in Parallel. Clarence A. Boddie. An explanation of how and why the machines are mutually adjusting. 2400 w. Power—July, 1907. No. 85344 C.

### Paris.

The St. Denis Station of the Paris Electric Co. (L'Usine Electrique de la Société d'Electricité de Paris à Saint-Denis, Seine). G. Boëto. Illustrated description of station and its steam and electric equipment, including 5000-kilowatt turbo-alternators. 2 plates. Serial. 2 parts. 10000 w. Génie Civil—Nov. 17 and 24, 1906. No. 81132 each D.

The St. Denis Power Station, Paris. Illustrated description of a fine modern station, its steam and electrical equipment, including 6,000-kilowatt turbo-alternators. 1500 w. Elec Rev, Lond—Jan. 11, 1907. No. 81737 A.

### Power-Factor.

Effect of Power Factor on Plant Equip-

# ELECTRICAL ENGINEERING

## Rhine

ment. Prof. J. H. Dobson. Shows that by proper plant equipment the efficiency of running can be increased; and the transformer, distributing and generator losses considerably reduced and capital expenditure saved—May, 1907. No. 85377 F.

Synchronous Motors for Improving Power-Factor. William Nesbit. Discusses the most efficient point to which the power-factor should be raised, and the advantage derived by installing a synchronous motor in a specific case. Short editorial. 3000 w. Elec Jour—Aug., 1907. No. 86399.

## Rhine.

The Water-Powers of the Rhine Near Laufenburg. Illustrated description of proposed utilization of the Rhine, which will prove one of the most important water-power plants on the European Continent. 1500 w. Engng—March 8, 1907. No. 83114 A.

## Rio de Janeiro.

Electrical Developments in Rio de Janeiro. Plans and description of the Rio das Lages power plant, and information of the possible developments of electrical power and lighting. 2000 w. Elec Rev, Lond—Sept. 6, 1907. No. 87057 A.

## Rome.

Progress on Rome's Municipal Electric Plant (Progetto per l'Impianto Elettrico Comunali di Roma). G. Giorgi. A description of the plant with plates showing the construction of the buildings, the arrangement of machines, etc. 9000 w. Boll della Soc d Ing e d Arch Ital—April 15, 1907. No. 84123 F.

The Municipal Electrical Installation of Rome. Trans. from *L'Ing. Ferroviaria*. Particulars in regard to a proposed municipal electrical undertaking for lighting and power at Rome. Italy. Ills. 1200 w. Elec Rev, Lond—May 17, 1907. No. 84575 A.

## Rutland, Vt.

Electric Railway Power at Rutland, Vermont. Illustrates and describes a new power development in the valley of East and Otter Creeks, and the country served. 2400 w. St Ry Jour—Nov. 24 1906. No. 80578.

## Safety.

Security from Fire and Danger to Life in Electrical Plants (Die Sicherheit Elektrischer Anlagen bezüglich Feuer und Leben). G. Dettmar. Conclusions based on the experiences of German fire-insurance companies. Tables. 4400 w. Elektrotech Zeitschr—May 30, 1907. No. 8088 B.

## GENERATING STATIONS

### Shops.

Shops of the New York Edison Company. Illustrates and describes some of the equipment of shops for central station repair work. 1800 w. Elec Wld—March 23, 1907. No. 83238.

### Smoke.

The Influence of Central-Station Loads on Smoke Production. Dr. Charles E. Lucke. Gives data from two large stations in every-day operation, with a brief record of results which seem to indicate that continuous smokeless fuel combustion is impossible with rapid load fluctuations. 5000 w. Power—March, 1907. No. 82656 C.

### Storage Batteries.

The Polyphase-Storage Battery Plant at the Carlsfund Works in Gross Rhüden (Die Drehstrom-Pufferanlage der Gewerkschaft Carlsfund in Gross Rhüden). Max Henke. Illustrated description of plant with motor generators and buffer battery at a German electro-chemical works. 3000 w. Elektrotech Zeitschr—Nov. 8, 1906. No. 80664 B.

The Soulier Apparatus for Charging Accumulators by Means of Alternating Current (L'Appareil à Charger les Accumulateurs au moyen de Courants Alternatifs). H. Fontaine. Illustrated description. 1800 w. Bull de la Soc d'Encour. Feb., 1907. No. 82974 G.

The Present Status of the Iron-Nickel Accumulator (Etat Actuel de l'Accumulateur Fer-Nickel). M. Jumau. Gives the theory and construction of the Edison cell, a report of elaborate tests and a discussion of the results. Also remarks by M. Janet. Ills. 15000 w. Bull d l Soc Inter d Elect'ns—July, 1907. No. 86223 F.

Improvements in Edison's Secondary Battery. Illustrated description of two inventions by Thomas A. Edison, upon which patents have been recently granted, to improve the operation and increase the efficiency of storage batteries. 1500 w. Sci Am Sup—Aug. 24, 1907. No. 86520.

The Application of the Storage Battery to Lighting, Power, and Railway Service. J. M. S. Waring. Considers means of controlling the charge and discharge of batteries; and the results accomplished by the batteries in their various applications. Discussion. Ills. 7000 w. Jour W Soc of Engrs—Aug., 1907. No. 87139 D.

The Trend of Storage Battery Development. L. H. Flanders. Considers only storage batteries designed for stationary use, describing an installation. Ills. 2200 w. Elec Jour—Sept., 1907. No. 87131.

## Storage Batteries

# ELECTRICAL ENGINEERING

## Switchboards

See also same title, under ELECTRO-CHEMISTRY.

## Switchboards.

Switchboard Practice for Voltages of 60000 and Upwards. Stephen Q. Hayes. Discusses the chief points of interest in connection with high-voltage switchboard practice. Ills. 5500 w. Pro Am Inst of Elec Engrs—June, 1907. No. 85761 D.

Switchboards for Small Stations. E. T. Mug. Suggestions for the design and arrangement. Diagrams. 1400 w. Elec Rev, N.Y.—Oct. 5, 1907. No. 87440.

The New Switchboard of the International Electric Company in Vienna (Die Neue Schaltanlage der Internationalen Elektrizitäts-Gesellschaft in Wien). Oskar Spitzer. Illustrated description. 1600 w. Elektrotech u Maschinenbau—Sept. 1, 1907. No. 87631 D.

## Switch-Gear.

Mechanical Considerations in the Design of High-Tension Switch-Gear. Henry William Edward Le Fanu. Illustrates and describes examples of high-tension switch-gear, which have successfully borne the test of practice. Discussion and correspondence. 20500 w. Inst of Civ Engrs—No. 3589. No. 86368 N.

Extra-High-Tension Switch-Gear. Introductory remarks on the rapid evolution of switch-gear, with an illustrated description of the gear recently constructed for the St. Andrew's Cross Station of the Glasgow Corporation. Plate. 3000 w. Engng—March 29, 1907. Serial. 1st part. No. 83553 A.

Central Station Switchgear, Etc. Arthur Imbery. Considers direct-current switchgear, etc., as used in central stations, supplying electrical energy for lighting, power and tramway purposes. Ills. 1200 w. Elec Engr, Lond—July 12, 1907. No. 85860 A.

## Sydney, N. S. W.

Sydney Electrical Supply. An illustrated article giving the history of the City Council's undertaking. 4000 w. Aust Min Stand—Oct. 17 and 24, 1906. Serial. 2 parts. No. 80804 each B.

## Tasmania.

Launceston, Tasmania. An illustrated report on the electricity works by William Corin, giving a résumé of progress, and an idea of the probable extensions. 4500 w. Elec Engr, Lond—July 5, 1907. No. 85581 A.

## United States.

Central Stations in the United States (Elektrische Centralen in de Vereenigde

## GENERATING STATIONS

## Wiring

Staten). Th. E. Maltha. Describes several large steam-driven power plants in and about New York, Boston and Chicago, giving details of equipment. Ills. 9000 w. De Ingenieur—May 25, 1907. No. 84992 D.

## Waltham.

The New Power Plant for Railway and Lighting Service in Waltham, Mass. Illustrated description of a plant built to supply cheap power to railway lines and for power and lighting. Reinforced concrete is extensively used, and many features of interest introduced. 3500 w. St Ry Jour—Dec. 29, 1906. No. 81319.

## Washington, D. C.

Electricity in Washington, D. C., and Its Environs. An illustrated outline of some of the more important electrical developments. 2000 w. Elec Rev, N.Y.—June 1, 1907. No. 84713.

The New Steam Turbine Plant of the Potomac Electric Power Company, Washington, D. C. Illustrated description of a modern power plant of large size employing steam turbines as prime movers. 3000 w. Elec Rev, N.Y.—March 2, 1907. No. 82683.

Generating Stations and Sub-Stations of the Potomac Electric Power Company, Washington, D. C. An illustrated historical review of electric lighting at the capital of the United States, describing the present stations. 7000 w. Elec Wild—June 1, 1907. No. 84721.

## Water Power.

The Cataract of Iguazu. Henry Harley. Illustrates several cataracts of South America capable of developing vast power, especially describing the cataract named on the Upper Parana. 2000 w. Cassier's Mag—April, 1907. No. 83330 B.

## Wind Power.

Wind Power for the Generation of Electricity. W. O. Horsnail. Considers the possibility of utilizing wind power for the electric lighting of country houses and gives an account of actual installations. 2000 w. Elect'n, Lond—May 3, 1907. Serial. 1st part. No. 84337 A.

Domestic Electric Light Plant Driven by a Windmill. Illustrations, with short description of a successful plant at Noblesville, Ind. 400 w. Sci Am—June 1, 1907. No. 84673.

## Wiring.

The Wiring of Small Central Stations. S. L. Sinclair. Remarks on the work and responsibility of the erecting engineer, considering briefly switchboards, generator cables, feeders, lights, motors,

# ELECTRICAL ENGINEERING

## Yellowstone

starters, protective apparatus, etc. 2000 w. Elec Jour—Jan., 1907. No. 81788.

## Yellowstone.

Water Power Development in the Yellowstone Valley. G. A. Wheeler. Explains the conditions in this valley, showing that the question of water power resolves itself into low pressure plants of comparatively small output, and gives an

## LIGHTING

## Atmospheric Absorption

illustrated description of such a plant. 2500 w. Sib Jour of Engng—March, 1907. Serial. 1st part. No. 83286 C.

## Zarubesi River.

Power Development of the Falls of the Zambesi River (L'Utilisation des Chutes du Zambèze). A description of the Victoria Falls and of the power developments which are to be made. 1400 w. L'Elec—Feb. 2, 1907. No. 82999 D.

## LIGHTING

## Arc Lamps.

Transformation of Electric Power into Light. Charles Proteus Steinmetz. Considers lighting by incandescence; selective radiation of solids; electroluminescence of vapors and gases; vacuum-tube illumination; the arc; and the arc as an illuminant. 2400 w. Pro Am Inst of Elec Engrs—Nov., 1906. No. 81062 D.

The Magnetite Arc Lamp. J. S. R. Hyden. Illustrates and describes this improvement on the carbon lamp, explaining the mechanism. 1200 w. Cassier's Mag—Feb., 1907. No. 82283 B.

Long Flame and Chemical Arcs. W. R. Ridings. Read before the British Westinghouse Engrs. Club. Considers the history and development of the flame arc lamp, and the efficiency and advantages of the flame arc lamp over the pure carbon type. 2000 w. Elec Engr, Lond—Feb. 8, 1907. No. 82453 A.

Flame Arc Lamps. H. S. Hatfield. Discusses the advantages of these lamps and illustrates and describes the design of Mr. Frank Lewis, its construction and control. 1800 w. Elect'n, Lond—March 15, 1907. No. 83268 A.

The Arc as a Source of Light. Elihu Thomson. Considers briefly the ways in which the electric flux known as an arc may produce light and the efficiency. 2500 w. Elec Rev, N Y—March 9, 1907. No. 82876.

Recent Progress in Arc Lamps: Flaming Arcs (Les Progrès Récents des Lampes à Arcs: les Arcs à Flamme). M. Blondel. A thorough discussion of this class of arc lamp, descriptions of different types, their construction, operation and principles. Serial. 1st part. Ill. 10500 w. Bull d l Soc Inter d'Elec'ns—March, 1907. No. 83697 F.

New Developments in Arc Lamps and High-Efficiency Electrodes. George M. Little. Read before the Nat. Elec. Lgt. Assn. Deals with magnetite electrodes

and a lamp suitable for using them. 2500 w. Elec Rev, N Y—June 15, 1907. No. 85068.

The Beck Flame Arc Lamp. Illustrated description of an arc lamp in which the carbons descend by gravity as they are consumed. 1500 w. Elec Engr, Lond—May 24, 1907. No. 84745 A.

Enclosed Arc Lamps. W. Wedding. Abstract translation from *Elektrische Kraftbetriebe u. Bahnen*. Describes tests and gives results. 1800 w. Elect'n, Lond—June 21, 1907. No. 85389 A.

Recent Developments in Metallic Flame Arc Lamps. G. Brewer Griffin. Describes direct-current lamps for operation in series, designed for street-lighting service. Ills. 2500 w. Elec Rev, N Y—Sept. 14, 1907. No. 87022.

The Flaming Arc Lamp. J. H. Hallberg. Reviews the development and present efficiency of arc lamps. 2000 w. Elec Rev, N Y—Sept. 14, 1907. No. 87013.

New Developments in Arc Lamps and High-Efficiency Electrodes. George M. Little. A comparison between metallic and carbon arcs. 2500 w. Sci Am Sup—Aug. 31, 1907. No. 86682.

New Methods of Suspending Arc Lamps (Neuerungen auf dem Gebiete der Bogenlampen—Aufhängungen). R. Osterburg. Illustrates and describes a large number of devices. 3000 w. Serial. 1st part. Elektrotech Zeitschr—Aug. 15, 1907. No. 86990 D.

Invention of the Enclosed Arc Lamp. L. B. Marks. Gives the history of the progress in solving this problem. Ills. 1200 w. Sibley Jour of Engng—Oct., 1907. No. 87865 C.

## Atmospheric Absorption.

The Absorption of the Atmosphere for Light of Different Wave-Lengths. J. S. Dow. Discusses some suggestions made by C. Orme Bastian, in a paper before the Inst. of Elec. Engrs. 3000 w. Elec Rev, Lond—Nov. 2, 1906. No. 80352 A.

# ELECTRICAL ENGINEERING

## Car Lighting

### Car Lighting.

The Vickers-Hall System of Train-Lighting. Illustrates and describes this system of electric lighting of trains. 2000 w. Engng—Dec. 14, 1906. No. 81240 A.

The Use of Storage Batteries in the Electric Lighting of Steam Passenger Equipment. J. R. Sloan. Describes the ways batteries are used in this service at present, and recent improvements introduced, giving specifications thought to represent the type of cell best suited to this work. Ills. 1000 w. Elec Rev, N Y—Dec. 8, 1906. No. 80890.

Train-Lighting. H. Henderson. Read before the Newcastle Sec. of the Inst. of Elec. Engrs. The present number is largely a discussion of electric lighting for trains, and its advantages, cost, etc. Ills. 3000 w. Elec Engr, Lond—March 8, 1907. Serial. 1st part. No. 83108 A.

The Verity-Dalziel System of Train Lighting. Illustrated description. 1200 w. Elec Rev, Lond—March 29, 1907. No. 83547 A.

Arc Lamps for Railway Car Illumination; Their Distribution and Characteristics. Alfred L. Eustace. A system recently installed in a car on the Chicago & Northwestern Railway is illustrated and described. It is on trial service between Chicago and Waukegan. 2200 w. Elec Wld—July 13, 1907. No. 85564.

### Clusters.

Incandescent-Lamp Clusters and Bowls. J. R. Cravath and V. R. Lansingh. Illustrates and describes various types, reporting tests made. 1500 w. Elec Wld—Dec. 1, 1906. No. 80806.

### Colloids.

Some Notes on Colloids. Appendix to the article on the "New Incandescent Electric Lamps." (No. 81030.) Notes furnished by Prof. Lottermoser for the better comprehension of recent developments, particularly the discovery of Kuzel. 2000 w. Engr, Lond—Dec. 28, 1906. No. 81541 A.

### Costs.

Comparative Costs of Gas and Electric Lighting. E. G. Hennard. Read before the Students' Sec. of the Inst. of Elec. Engrs. Gives a brief study of the prices of gas and electricity in London, and a general consideration of lighting costs, with explanation of methods used. 2300 w. Elec Engr, Lond—April 19, 1907. Serial. 1st part. No. 83989 A.

A Comparative Study of Lighting Costs and Related Matters (Vergleichende Betrachtungen über Beleuchtungskosten und

## LIGHTING

## Frosted Lamps

Einschlägiges). August Marussig. The first instalment of the serial gives the mathematics of illumination and discusses the lighting power of various illuminants. Diagrams. 5000 w. Serial. 1st part. Oest Wochenschr f d Oeff Bau-dienst—April 13, 1907. No. 84178 D.

Public Lighting Service, Corporate and Municipal. Judson H. Boughton. A study of electric stations, giving unit costs of plant and operation from many installations. 3500 w. Engineering Magazine—Nov., 1907. No. 87972 B.

### Exposition.

Lighting of the Jamestown Ter-Centennial Exposition. An illustrated description of the lighting of the exhibition buildings and grounds. Also of the electric service plant. 2000 w. Elec Wld—June 1, 1907. No. 84722.

### Factories.

Factory Lighting. Abstract of a paper by A. P. Biggs, read before the Ohio Elec. Lgt. Assn. Considers the sources of light now available and their merits, cost, etc. 4000 w. Eng Rec—Sept. 21, 1907. No. 87151.

### Filaments.

The Temperature and Emissivity of Carbon, Osmium, and Tungsten Filaments. A. Grau. Abstract translation from *Elektrotechnik und Maschinenbau*. A report of experimental investigations. 1200 w. Elect'n, Lond—June 7, 1907. No. 85107 A.

Experiments on Osram, Wolfram, Zircon, and Other Lamps. J. T. Morris, F. Stroude, and R. Milward Ellis. Gives results of researches on the physical properties of such lamps, discussing the effect of voltage variation when the lamp is working on direct-current. 1700 w. Elect'n, Lond—July 26, 1907. Serial. 1st part. No. 86165 A.

### Frosted Lamps.

An Analysis of the Causes of Candle-Power Diminution in Frosted Lamps. Preston S. Millar. Discusses the nature of the causes of rapid depreciation of lighting with frosted lamps. Also editorial. 3000 w. Elec Wld—April 20, 1907. No. 83852.

An Explanation of the Short Life of Frosted Lamps. Edward P. Hyde. An explanation of the rapid decrease in candle-power of frosted lamps. 1500 w. Elec Rev, N Y—April 6, 1907. No. 83485.

A Brief Theory of the Reduction in the Service Life of Frosted Incandescent Lamps. Dr. A. E. Kennelly. Outlines a quantitative theory deriving formulæ

# ELECTRICAL ENGINEERING

## Germany

which serve to explain the results obtained by Preston S. Millar. 1600 w. Elec Wld—May 18, 1907. No. 84416.

## Germany.

Electric Lighting in Germany. Dr. Phillip G. Klingenberg. Gives a review of the general aspects of electric lighting in Germany. 4500 w. Elec Rev, N Y—Sept. 21, 1907. No. 87159.

## Helion Lamps.

Helion Filament Incandescent Lamp. Prof. H. C. Parker and Walter G. Clark. Read before the Am. Phys. Soc. A description of lamps having filaments which are not metallic, which can be operated at 1 watt per candle, at a temperature much below the temperature of metallic filaments operated at this consumption. Ills. 1500 w. Elec Wld—Jan. 5, 1907. No. 81496.

The Helion Light. Walter G. Clark. An account of the Helion filament by one of the discoverers, stating the advantages claimed. 1800 w. Elec Rev, N. Y.—Sept. 14, 1907. No. 87015.

The Helion Lamp. Walter G. Clark and Herschel C. Parker. Describes the development of the Helion filament and the method of making it, explaining its characteristics. 1800 w. Sch of Mines Qr—July, 1907. No. 86649 D.

## History.

A History of Gas and Electric Lighting. M. E. Cornuault. Presidential address before the Société des Ingenieurs Civils de France. 4000 w. L'Elec—Feb. 2, 1907. No. 82998 D.

## Illumination.

Indoor Illuminants. James Swinburne. Paper read before the Assn. of Engrs.-in-Charge. Calls attention to points of importance in general and special lighting. 3000 w. Elec Engr, Lond—Nov. 16, 1906. Serial. 1st part. No. 80713 A.

Modern Electrical Illuminants. J. S. Dow. Discusses recent lamps introduced to improve the efficiency, considering the Nernst lamp, the mercury-vapor tube system, and others. 3000 w. Elec Engr, Lond—Oct. 26, 1906. No. 80301 A.

Data on Indoor Illumination. J. E. Woodwell. Abstract of a paper read before the Ill. Engng. Soc. Discusses the principles and factors and their application. Ills. 3300 w. Elec Rev, N Y—Nov. 3, 1906. No. 80254.

Location of Lamps and Illuminating Efficiency. Preston S. Millar. Abstract of a paper before the Ill. Engng. Soc. Considers the relative efficiency of four different methods of indoor illumination

## LIGHTING

## Illumination

which are in common use to-day. 2000 w. Elec Rev, N Y—Nov. 17, 1906. No. 80430.

Some Points on Illuminating Engineering for the Small Central Station. J. R. Cravath. Read before the N.-W. Elec. Assn. Gives suggestions of value as to things to be aimed at and avoided in securing good illuminating results. 2800 w. Elec Wld—Jan. 26, 1906. No. 81944.

Light. W. R. Whitney. A brief review of present schemes for the production of electric light, considering the possible limitations, and present efficiency. 2500 w. Sib Jour of Engng—Jan., 1907. No. 81914 C.

The Comparative Economy of Various Methods of Illumination. Information relating to the efficiency and cost of various illuminants. 2000 w. Sci Am Sup—Jan. 12, 1907. No. 81572.

The Rudiments of Illumination. Dr. Louis Bell. A discussion of the choice and placing of illuminants, and matters affecting the distribution. 2000 w. Elec Wld—Jan. 5, 1907. No. 81503.

Calculation of Luminous Intensity at Various Angles (Beleuchtungsberechnungen). L. Bloch. Examination of results of photometric tests of arc and incandescent lamps at different angles. Tables and diagrams. Serial. 2 parts. 6800 w. Elektrotechnische Zeitschrift—Dec. 6 and Dec 13, 1906. No. 81835 each B.

Light and Illumination. Charles P. Steinmetz. Read before the New York Section of the Ill. Engng. Soc. A study of the problems of effective illumination. 10,000 w. Pro Age—March 15, 1907. No. 83006.

The Relative Efficiency of Light Sources. E. Percival Lewis. Explains the nature of the problem of illumination and suggests the direction in which progress may be expected, describing some recent improvements in methods of lighting. 2500 w. Cal Jour of Tech—April, 1907. No. 83954.

Comparison of Methods of Office Illumination. Edward A. Norman. Abstracted from a paper before the Ill. Engng. Soc. Shows results obtained by three different methods of office illumination, comparing the relative efficiencies, and presents results secured by arc lamps of the concentric diffuser type in a drafting room. Ills. 2000 w. Elec Rev, N Y—April 27, 1907. No. 83951.

The Problem of Illumination. Joseph H. Hart. Briefly considers the problems of light production. 2000 w. Cassier's Mag—June, 1907. No. 85180 B.

# ELECTRICAL ENGINEERING

## Illumination

Illumination and Some Illuminants. J. D. Mackenzie. Abstract of paper read before the Glasgow Sec. of the Inst. of Elec. Engrs. Discusses necessary qualifications for successful illumination and how they may be attained in practice. 2000 w. *Elect'n, Lond*—June 21, 1907. No. 85390 A.

The Fundamental Principle of Artificial Illumination. Editorial on the principles governing safe and useful applications of light. 3500 w. *Eng News*—July 25, 1907. No. 85891.

The Elements of Inefficiency in Diffused Lighting Systems. Preston S. Millar. Read before the Ill. Engng. Soc. Considers the elements of inefficiency in lighting systems of this character, basing most of the conclusions upon measurements of illumination intensity. 3000 w. *Pro Age*—Sept. 2, 1907. No. 86665.

Recent Advances in Artificial Lighting. Information of new incandescent lamps recently put on the market, with illustrations. Also recent advances in gas lighting. 7500 w. *Eng News*—July 25, 1907. No. 85890.

Recent Advances in Artificial Lighting. An illustrated article considering recent developments in lamps for out-door use, or for very large interiors. Arc and vacuum-tube electric lamps. 5500 w. *Eng News*—Sept. 12, 1907. No. 87002.

Some Artistic Requirements of Artificial Illumination. Bassett Jones, Jr. Discusses the considerations that must govern the design of an architectural lighting scheme. 2500 w. *Elec Rev, N Y*—Sept. 14, 1907. No. 87018.

The Engineering of Show-Window Illumination. J. R. Cravath and V. R. Lansingh. Discusses the lighting of windows for the purpose of displaying goods at the best advantage. 3300 w. *Elec Wld*—Sept. 7, 1907. No. 86843.

The Status of Illuminating Engineering. Dr. Louis Bell. Discusses the requirements of illuminating engineering as a profession. 1500 w. *Elec Rev, N Y*—Sept. 14, 1907. No. 87009.

Calculation of Illumination from Inclined Light Sources. J. S. Codman. Mathematical. 800 w. *Elec Rev, N Y*—Oct. 5, 1907. No. 87439.

Lighting of the State Capitol at Harrisburg, Pa. An illustrated article describing this beautiful State building, and the arrangements for artificial lighting by electricity. 3500 w. *Elec Wld*—Feb. 2, 1907. No. 82129.

Economical House Lighting. Van Rensselaer Lansingh. Considers the lighting of houses where good, economical illumina-

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tion and artistic effects are desired. Ills. 2000 w. *Elec Rev, N Y*—Sept. 14, 1907. Serial. 1st part. No. 87012.

The Electric Illumination and Wiring of the Singer Building. Illustrated description of the plant and the installation. 3500 w. *Elec Age*—Oct., 1907. No. 87868.

A Noteworthy Example of Modern Illuminating Engineering. Illustrates and describes the artificial lighting of the engineering laboratories of the University of Pennsylvania. 800 w. *Elec Rev, N Y*—Dec. 29, 1906. No. 81306.

## Incandescent Lamps.

Preliminary Measurements on Temperature and Selective Radiation of Incandescent Lamps. C. W. Waidner and G. K. Burgess. A communication from the Bureau of Standards reporting researches to determine the relative importance of temperature and of selective radiation in producing the very high efficiencies with filaments of carbon, tantalum, and tungsten. Also editorial. 4000 w. *Elec Wld*—Nov. 10, 1906. No. 80376.

The Determination of the Mean Horizontal Intensity of Incandescent Lamps by the Rotating Lamp Method. Eduard P. Hyde and F. E. Cady. Outlines four methods in use and gives the results of a valuable research on the effect of rotation upon the measurement of mean horizontal candle-power. 5000 w. *Elec Wld*—Nov. 17, 1906. No. 80412.

The William J. Hammer Collection of Incandescent Electric Lamps. Report of the Committee on Science and the Arts on the historical collection of incandescent electric lamps made and exhibited at the St. Louis Exposition of 1904, by Willis J. Hammer. Ills. 2500 w. *Jour Fr Inst*—Nov., 1906. No. 80405 D.

Metallic Filaments for Electric Lamps. J. Swinburne, in *The London Times Engng. Sup.* Information in regard to the process invented by Dr. Hans Kuzel by which the most refractory metals can be made into filaments. 900 w. *Sci Am Sup*—Dec. 15, 1906. No. 80978.

The New Incandescent Electric Lamps. An interesting review of recent developments in these lamps, and the properties which give them value in therapeutics and the industries, as well as for lighting. 3500 w. *Engr, Lond*—Dec. 7, 1906. Serial. 1st part. No. 81030 A.

Experiments on Carbon, Osmium, and Tantalum Lamps. J. T. Morris. A report of experiments undertaken to ascertain how variation of voltage affects the candle-power and efficiency of certain recent types of filament lamps. 2700 w.

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Elect'n, Lond—Dec. 14, 1906. No. 81242 A.

New Lights and New Illuminants from the Central Station's Point of View. R. S. Hale. Read before the Ill. Engng. Soc. Suggestions for the handling of the new lamps and points from the writer's experience. 3500 w. Elec Rev, N Y—Aug. 17, 1907. No. 86424.

Tests of Incandescent Lamps. L. B. Spinney. A discussion of lamp efficiency, giving results of lamp tests. 1500 w. Elec Wld—Dec. 15, 1906. No. 81053.

Developments in Electric Lamps During 1906. Dr. Clayton H. Sharp. A review of the progress of the year, especially the improved filaments, and the efficiency of the tungsten lamp. 1500 w. Elec Rev, N Y—Jan. 12, 1907. No. 81590.

New Incandescent Lamps. J. Swinburne. Read before the Inst. of Elec. Engrs. Reviews the history of the development of these lamps, discussing the metallic filaments now being considered. 5800 w. Elec Engr, Lond—Jan. 11, 1907. Serial. 1st part. No. 81734 A.

New Types of Incandescent Lamps. Clayton H. Sharp. Considers new processes of manufacture and new filaments, especially the peculiarities or the properties of the tantalum and the tungsten lamps. 6800 w. Pro Am Inst of Elec Engrs—Dec., 1906. No. 81907 D.

The Effect of High Efficiency Lamps on the Electric Lighting Industry. W. Tatlow. Read before the Dublin Loc. Sec. of the Inst. of Elec. Engrs. Discusses the effect of the new lamps on the design of a private installation, showing how low voltage lamps may be used without the necessity of a transformer to transform the whole current required. 2000 w. Elect'n, Lond—April 12, 1907. No. 83874 A.

The Small Station and the New Lamps. Harry V. Forest. Discusses the changes anticipated in the electric lighting business from the introduction of high efficiency lamps, giving suggestions. 1500 w. Elec Wld—April 6, 1907. No. 83495.

Investigations on Light Standards and the Present Condition of the High-Voltage Glow Lamp. Clifford C. Paterson. An illustrated account of tests, made at the National Physical Laboratory, giving facts of value to the electrical and gas industries. Deals with flame standards and other tests. 12600 w. Inst of Elec Engrs—Jan. 24, 1907. No. 82057 N.

Investigations on Light Standards and the Present Condition of the High-Voltage Glow Lamp. Clifford C. Patterson. Abstract of a paper read before the Inst.

of Elec. Engrs. An account of investigations carried out at the National Physical Laboratory. The first part deals with the standards of light; the second part with commercial glow-lamp testing. 5500 w. Elect'n, Lond—Jan. 25, 1907. Serial. 1st part. No. 82145 A.

The Standard Specification for Carbon Glow Lamps: A Criticism. Lancelot W. Wild. A criticism of tests proposed, with suggestions. 1600 w. Elec Rev, Lond—Feb. 15, 1907. No. 82602 A.

Ratio of the Carcel, Hefner and Vernon-Harcourt Standards of Light (Etude Sur Le Rapport Des Trois Lampes Carcel, Hefner et Vernon-Harcourt). Laporte and Jouaust. Relative luminosity of these standards discussed on the basis of results obtained by various investigators. 3300 w. Bulletin De La Société Internationale Des Electriciens—No. 58, Oct., 1906. No. 82316 F.

Comparative Life Tests on Carbon, Nernst, and Tantalum Incandescent Lamps Using Alternating Currents. H. F. Haworth, T. H. Matthewman, and D. H. Ogley. Tests made to determine whether the working of such lamps was in any degree different with alternating-current than when using continuous current. Ills. 4500 w. Inst of Elec Engrs—Feb. 7, 1907. No. 82615 N.

Modern Types of Electric Lamps (Modern Elektrische Lichtbronnen). E. J. F. Thierens. Comparison of principal lamps now in use. 5400 w. De Ingenieur—Jan. 12, 1907. No. 82337 D.

The New Types of Incandescent Lamps. A. Libesny. Abstract translation. Considers some of the newer types of lamps, and their increased efficiency, discussing the problems involved. 1800 w. Elect'n, Lond—March 1, 1907. No. 82895 A.

Electric Lighting by Incandescence. William J. Hammer. A review of the early work and the development, and the recent work with metallic filament lamps. 3500 w. Elec Rev, N Y—March 9, 1907. No. 82879.

Determination of the Average Horizontal Intensity of Incandescent Lamps (Über die Bestimmung der mittleren Horizontal Lichtstärke von Glühlampen). F. Uppenborn. Discussion of different kinds of photometers and tabulation of the results of tests. Ills. Serial. 2 parts. 4800 w. Elektrotechnische Zeitschrift—Feb. 14 and 21, 1907. No. 82962 each B.

Economic Considerations in the Use of Metallic-Filament Incandescent Lamps (Considerazioni Economiche sull' Uso di Lampade Incandescenti a Filamento Metallico). D. Civita. Mathematical and



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descriptive paper. 3000 w. *Elettricità*—April 12, 1907. No. 84120 D.

On the Temperature and Illuminating Properties of Carbon, Osmium and Tungsten (Ueber Temperatur und Lichtemission von Kohle, Osmium und Wolfram). A. Grau. Results and comparison of tests of lamps with filaments of these substances. Ills. 2000 w. *Elektrotech u Maschinenbau*—April 14, 1907. No. 84155 D.

A New Leading-in Conductor for Electric Lamps. C. O. Bastian. Read before the Glasgow Sec. of the Inst. of Elec. Engrs. Describes the Sineplat seal, which consists of enamel glass on copper wire. 1700 w. *Elec Engr, Lond*—May 17, 1907. No. 84574 A.

The Improvement of the Incandescent Lamp. R. Milward Ellis. Considers the improvement of the carbon filament, and other filaments for incandescent lamps. 2500 w. *Elec Engr, Lond*—July 19, 1907. Serial. 1st part. No. 85984 A.

Modern Incandescent Lamps (Modernas Lámparas Eléctricas de Incandescencia). Sancho López López. The first part of the serial deals with the osmium lamp. Ills. Serial. 1st part. 4000 w. *Energia Elec*—June 10, 1907. No. 85619 D.

Government Incandescent Lamp Specifications. Gives the main portions of specifications as contained in a recent call for proposals for lamps to be supplied for U. S. Government service. 2000 w. *Elec Wld*—Aug. 3, 1907. No. 86147.

Developments in Electric Incandescent Lamps. Leon Gaster. A short review of some of the most important improvements in metallic filaments and vacuum tubes. 4500 w. *Elec Engrs, Lond*—Aug. 16, 1907. No. 86589 A.

Recent Progress in Electric Incandescent Lamps. Lionel Calisch. Briefly reviews recent improvements made to increase the efficiency, concluding that the light of the future will probably be either a luminescent gas or vapor. 1500 w. *Cassier's Mag*—Aug., 1907. No. 86011 B.

Incandescent Lamp Development During the Last Twenty Years. S. E. Doane. A résumé of interesting features in the development. 3500 w. *Elec Rev, N Y*—Sept. 14, 1907. No. 87010.

The Recent Incandescent Lamp Developments and Their Significance. Francis W. Willcox. A review of recent improvements in metallic filaments, showing that many important changes are in progress. Ills. 4500 w. *Elec Rev, N Y*—Sept. 14, 1907. No. 87011.

The Effect of Higher-Efficiency Lamps on Station Output and Income. A sym-

posium from central station men in the United States and Great Britain. 2500 w. *Elec Rev, N Y*—Sept. 14, 1907. No. 87014.

The "Turn-Down" Electric Lamp. A. Frederick Collins. Reviews the various types of "turn-down" lamps invented, explaining their construction. Ills. 1500 w. *Sci Am*—Sept. 21, 1907. No. 87126.

The Sirius Colloid Lamp. Paul McJunkin. Describes this lamp and its behavior. 800 w. *Elec Rev, N Y*—Sept. 14, 1907. No. 87016.

Developments in Electric Incandescent Lamps. Leon Gaster. Reviews some of the more important improvements. 3800 w. *Cent Sta*—Oct., 1907. No. 87563.

See also Filaments, Frosted Lamps, Helion Lamps, Illumination, Nernst Lamps, Tantalum Lamp, and Tungsten Lamps, under LIGHTING.

## Mechanical Equivalent.

The Mechanical Equivalent of Light. Reviews the measurements of Dr. C. V. Drysdale and A. C. Jolley, their methods, and the results. 1400 w. *Engng*—Oct. 18, 1907. No. 87959 A.

## Mercury Arcs.

The Uviol Lamp. An illustrated description of a modification of the Hewitt mercury vapor lamp, for producing ultraviolet rays. 1000 w. *Sci Am*—March 9, 1907. No. 82809.

The Mercury Vapor Lamp (La Lampe à Vapeur de Mercure). M. de Recklinghausen. Gives a sketch of the development of the Cooper-Hewitt lamp, describes its construction and operation, and compares it with other types of lamps. Ills. 3700 w. *Bull Soc d'Encour*—April, 1907. No. 84900 G.

Tests of a Mercury Arc Lamp. A. N. Topping. Brief description of the main points in these lamps, with account of tests. Ills. 3000 w. *Purdue Engng Rev*—1907. No. 85940 N.

The Mercury Arc and Its Technical Applications (Der Quecksilber-Lichtbogen und seine Technische Verwendung). Josef Polak. The first part of the serial discusses the physical principles on which the mercury vapor lamp is constructed. Ills. 4500 w. Serial. 1st part. *Elektrotech Zeitschr*—June 13, 1907. No. 85686 D.

The Mercury Vapor Lamp as a Factor in Electricity Supply Development. Discusses the merits of the mercury vapor lamp and its practical application, illustrating some forms recently brought out. 2000 w. *Elec Rev, Lond*—Aug. 23, 1907. No. 86721 A.

The Mercury Vapor Lamp. Percy H.

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## Mercury Arcs

Thomas. Gives an outline of the form and characteristics of this illuminant, stating its advantages and limitations. 3500 w. *Elec Rev*, N Y—Sept. 14, 1907. No. 87021.

The Development of the Mercury-Vapor Lamp (Die Entwicklung der Quecksilberlampe). Dr. Br. Glatzel. Outlines the development of the mercury-vapor lamp, illustrates and describes various existing types, and discusses their utility. 3000 w. *Verkehrstech Woche u Eisenbahntech Zeitschr*—Aug. 24, 1907. No. 86950 D.

The Mercury Vapor Lamp in a Magnetic Field. Wilhelm Schenkel. Abstract translation. An investigation of the Hall effect in the mercury vapor lamp made to determine the nature of the luminous effect in the mercury arc. 1500 w. *Elect'n, Lond*—Nov. 9, 1906. No. 80485 A.

## Mirrors.

Parabolic Mirrors for Incandescent Lamps (Parabolspiegel mit elektrischem Glühlicht). Georg König. Discussion of advantages gained by use of mirrors for incandescents and for Nernst lamps. Diagrams. 4200 w. *Elektrotech Zeitschr*—Jan. 17, 1907. No. 82331 B.

## Moore Light.

Light from Gaseous Conductors Within Glass Tubes—The Moore Light. D. McFarlan Moore. An illustrated article explaining and describing this system, and reporting comparative tests. 9500 w. *Pro Am Inst of Elec Engrs*—April, 1907. No. 84519 D.

The Moore Vacuum-Tube Light and the Luminosity of Gases. C. J. Thatcher. A brief description of this lamp and a consideration of its salient features, and its possible bearing on gaseous luminosity. 3200 w. *Elec-Chem & Met Ind*—May, 1907. No. 83980 C.

The Occlusion of Residual Gas by the Glass Walls of Vacuum Tubes. A. A. Campbell Swinton. Abstract of a paper read before the Royal Soc. describing investigations on this subject. 1400 w. *Elect'n, Lond*—July 26, 1907. No. 86170 A.

The Moore Light and Illuminating Engineering. D. McFarlan Moore. An illustrated article describing the Moore tube-lighting system. 2000 w. *Elec Rev*, N Y—Sept. 14, 1907. No. 87023.

## Nernst Lamps.

The Nernst Glower and the Present Status of the Nernst Lamp. Otto Foell. Describes characteristics of the Nernst lamp and details of new applications. Ills. 3500 w. *Elec Rev*, N Y—Sept. 14, 1907. No. 87020.

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The Value of the Nernst Lamp to the Central Station. A. E. Fleming. Explains some of the advantages of the Nernst system. 2200 w. *Cent Sta*—Oct., 1907. No. 87562.

## Photometry.

Investigation of a Weber Photometer (Einige Untersuchungen an einen Weberschen Photometer). Karl Satori. Experiments to determine constants, and discussion of operation. Curves. 700 w. *Elektrotech Zeitschr*—Oct. 28, 1906. No. 80671 D.

The Theory of Flicker Photometers. J. S. Dow. Considers some of the chief points arising in the design and use of such instruments. 2200 w. *Elect'n, Lond*—Feb. 1, 1907. Serial. 1st part. No. 82248 A.

A New Comparison Photometer. Dr. Charles H. Williams. Read before the Ill. Engng. Soc. Describes a portable instrument for measuring the light reflected from surfaces to determine whether one method of lighting is better than another. 1000 w. *Am Gas Lgt Jour*—Aug. 19, 1907. No. 86435.

Illumination Photometers and Their Use. Preston S. Millar. Read before the Ill. Engng. Soc. General discussion of the aims of illumination photometers, giving illustrated descriptions of eleven types. 7000 w. *Am Gas Lgt Jour*—Aug. 19, 1907. No. 86436.

The Application of the Spherical Photometer (Zur Anwendung des Kugelphotometers). R. Ulbricht. An illustrated mathematical paper on the use of the Ulbricht photometer. 4500 w. *Elektrotech Zeitschr*—Aug. 8, 1907. No. 86988 D.

The Speed of Flicker Photometers. J. S. Dow. Investigates the connection between the sensitiveness of a flicker photometer and the speed at which the flicker disc is driven. 1800 w. *Elect'n, Lond*—May 31, 1907. No. 84884 A.

Measurement of the Instantaneous Candle Power of Alternating Current Lamps. (Messung der Momentanwerte der Lichtstärken von Wechselstromlampen). Johann Sahulka. Illus. 2600 w. *Elektrotechnik und Maschinenbau*—March 17, 1907. No. 83639 D.

The Determination of the Mean Horizontal Candle-Power of Glow Lamps. F. Uppenborn. Abstract trans. from *Elektrotech. Zeitschr*. Describes the four chief methods, investigating the conditions necessary to obtain accurate results. 2500 w. *Elect'n, Lond*—May 3, 1907. No. 84338 A.

Measurement of Instantaneous Values of Electric Lights on Alternate Current.

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## Photometry

Dr. Johann Sahulka. Abstracted from *Elektrotechnik und Maschinenbau*. Describes methods proposed by the writer, and apparatus used. 1500 w. Elect'n, Lond—May 31, 1907. No. 84886 A.

On the Determination of the Mean Horizontal Intensity of Incandescent Lamps. Edward P. Hyde and F. E. Cady. Discusses the error due to flicker in lamp testing, giving recent investigations, the methods and results. 4000 w. Elec Wld—June 22, 1907. No. 85226.

On the Determination of the Mean Horizontal Intensity of Incandescent Lamps. Edward P. Hyde and F. E. Cady. Gives method and results of recent experiments to study the accuracy of the rotating lamp method. 4000 w. Bul Bureau of Stand—Aug., 1907. No. 87700 N.

Photometry at the Bureau of Standards. Dr. Edward P. Hyde. Illustrated description of the photometric equipment and methods of testing and investigating. 3500 w. Elec Rev, N Y—Sept. 14, 1907. No. 87017.

A Comparison of the Unit of Luminous Intensity of the United States with Those of Germany, England, and France. Edward P. Hyde. Abstracted from the *Bulletin* of the Bureau of Standards. 2500 w. Elect'n, Lond—July 19, 1907. No. 85988 A.

Photometric Units. Preston S. Millar. Discusses the nomenclature used in photometry in the United States, and the system of units adopted at the Geneva Congress. 1700 w. Elec Rev, N Y—Sept. 14, 1907. No. 87019.

The Value of Photometry in Central-Station Practice. Robert McCourt. Shows what can be done with a few simple instruments with a fair degree of accuracy. 3500 w. Elec Engr, Lond—July 12, 1907. No. 85862 A.

## Projectors.

Improvements in Projectors. John I. Hall. Deals with the utilization of ordinary dispersion lenses of projectors to fulfil the requirements of the Suez Canal regulations, which stipulate that searchlights shall have a shadow in the center of 5° divergence. 1000 w. Elec Rev, Lond—March 1, 1907. Serial. 1st part. No. 82891 A.

## Resistance.

The Beck "Regler." Illustrates and describes this automatic resistance for maintaining constant current for arc lamps, electric furnaces, etc. 350 w. Elec Engr, Lond—Aug. 2, 1907. No. 86357 A.

## LIGHTING

### Standards.

Primary, Secondary, and Working Standards of Light. Dr. Edward P. Hyde. Read before the Ill. Engng. Soc. Considers practical questions in connection with the relationship of primary, secondary, and working standards of light. 1700 w. Pro Age—Sept. 2, 1907. No. 86664.

### Street Lighting.

Notes on Street Lighting. J. I. Mange. Considers the electric arc, gas, and incandescent lamps, distribution and related matters. 2200 w. Munic Jour & Engr—Nov. 7, 1906. No. 80319 C.

Suggested Specifications for Street Lighting. Report to the National Electric Light Association by a committee, with editorial comment unfavorable to the adoption of the specifications. 3200 w. Eng Rec—July 20, 1907. No. 85791.

Side-Street Lighting. A. C. Hanson. Remarks on the various methods tried for lighting side-streets. Considers the tantalum lamp best suited for this purpose, explaining the writer's methods. 1400 w. Elec Rev, Lond—Jan. 18, 1907. No. 81983 A.

### Submarine.

Electric Arc Lamp for Submarine Work. Illustrated description. 600 w. Engr, Lond—Oct. 26, 1906. No. 80313 A.

A Submarine Lamp. Illustrated description of the Yale submarine lamp, invented by Francis G. Hall. 700 w. Sci Am Sup—Dec. 1, 1906. No. 80739.

### Tantalum Lamp.

The Deformation of the Tantalum Filament when Used with Alternating Current. F. Stroude Stud. Brief note on the observed deformation and its cause, with suggestion for improving the tantalum lamp. 700 w. Elec Engr, Lond—Sept. 20, 1907. No. 87332 A.

### Terminology.

The Concepts and Terminology of Illuminating Engineering. Dr. Clayton H. Sharp. Presidential address delivered at the convention of the Ill. Engng. Soc., Boston. Aims to show the utility of certain ideas and names, outlining the line of development recommended. 4000 w. Elec Rev, N Y—Aug. 10, 1907. No. 86326.

### Theory.

Electric Lighting and Heating. This introductory article considers the theory, progress in applications, metallic filament lamps, conversion of electric power into light, industrial changes effected by cheap power, etc. 3000 w. Builder—Jan. 5, 1907. Serial. 1st part. No. 81624 A.

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### Tungsten Lamps

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#### Tungsten Lamps.

Tungsten Lamp Patent. Specifications and claims of this first patent. 1200 w. Elec Wld—Jan. 5, 1907. No. 81497.

The New Tungsten Lamps (Les nouvelles Lampes Electriques au Tungstene). M. Bainville. A discussion of the manufacture and practical value of the Tungsten filament lamp. Discussion. 3800 w. Bull Soc Int d Elecs—Feb., 1907. No. 82982 F.

The Tungsten Lamp (La Lampe au Tungstene). A. Bainville. Details of their manufacture and utility showing curves

of lighting power. Ill. 1200 w. L'Elec'n—March 23, 1907. No. 83687 D.

The Economy of the Tungsten Lamp. Alfred A. Wohlaer. A critical discussion of the relations between initial cost of the lamp, its life and its efficiency, price of energy, etc. 2000 w. Elec Wld—Sept. 7, 1907. No. 86844.

#### Voltage.

The Case for Low Pressure. A. C. Hanson. Discusses the relative suitability of high and low voltage for different types of lamps and for motors. 2500 w. Elec Rev, Lond—July 26, 1907. No. 86164 A.

## MEASUREMENT

### Alternating Current.

The Application of the Alternating-Current Arc in Electrical Measurements (Die Verwertung des Lichtbogen-Wechselstromes in der Messtechnik). C. Heinke. A mathematical paper discussing the application of the high-frequency arc to the determination of alternating-current coefficients. Ills. 4000 w. Elektrotech Zeitschr—Sept. 19, 1907. No. 87659 D.

### Alternator Tests.

Report on Test of 1,000 K. W. B. T. H. Turbo-Alternator Set Made at Contractors' Works, Rugby. Illustration, with results of an official test on a Curtis steam-turbine, driving a two-phase alternator. 600 w. Elec Engr, Lond—Sept. 13, 1907. No. 87179 A.

Testing Alternating-Current Apparatus by the Behrend Method. Illustrations and information concerning this method devised by B. A. Behrend, for testing alternating-current generators and synchronous motors under full-load conditions while they are still in the shop. 500 w. Eng News—Nov. 15, 1906. No. 80447.

### Capacity.

The Effective Capacity of Large Current Cables, and Their Measurement with Direct Current (Über die wirksame Kapazität von Starkstromkabeln und ihre einheitliche Messung mit Gleichstrom). W. Akemann. Mathematical treatment. Diagrams. 1800 w. Elektrotech Zeitschr—Jan. 3, 1907. No. 82327 B.

On the Effective Capacities of Cables and Their Determination by the Ballistic Method. W. Akemann. Abstract translation from *Elektrotechnische Zeitschrift*. Defines the effective capacity of any conductor of a multi-core cable, and shows

how to determine it by the ballistic method, the investigation being extended to cables with pilot wires. 800 w. Elect'n, Lond—Feb. 8, 1907. No. 82460 A.

Measurement of the Resistance of Insulation and the Capacity of the Separate Wires of an Alternating-Current Circuit during Working (Messung des Isolationswiderstandes und der Kapazität der Einzelnen Leiter von Wechselstrom-Anlagen während des Betriebes). Johann Sahulka. Diagrams. 6000 w. Serial. 2 parts. Elektrotech Zeitschr—May 2 and 9, 1907. No. 84985 each B.

### Condensers.

Simultaneous Measurement of the Capacity and Power Factor of Condensers. Frederick W. Grover. Deals with the determination of the power factor of condensers to be used for precision measurements of inductance and capacity. 13800 w. Bul Bureau of Stand—Aug., 1907. No. 87701 N.

### Core Losses.

Eddy Current Losses in Armature Teeth. F. E. Meurer. Develops a method by which the core losses in dynamo-electric machinery may be determined with the aid of only a small amount of empirical approximation. 3000 w. Elec Wld—April 20, 1907. No. 83850.

### Cymometer.

The Fleming Direct-Reading Cymometer and its Applications. An illustrated description of the cymometer as designed by Dr. J. A. Fleming, and the method of using the instrument for the determination of wave length, frequency, capacity, inductance, etc. 2500 w. Elect'n, Lond—Jan. 11, 1907. Serial. 1st part. No. 81741 A.

The Fleming Direct-Reading Cymome-

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## Dielectrics

ter. A Frederick Collins. Illustrated description of an instrument for measuring wireless telegraph waves. 1500 w. Sci Am Sup—July 27, 1907. No. 85893.

## Dielectrics.

On the Loss of Energy in the Dielectric of Condensers and Cables. Dr. Bruno Monasch. Gives a method of measuring dielectric losses and discusses the sources of error to be avoided. 3000 w. Elect'n, Lond—June 28, 1907. Serial. 1st part. No. 85497 A.

## Frequency Meters.

Frahm's Speed and Frequency Gauge. Frederick Lux. Gives an explanation of resonance and an illustrated description of the Frahm resonance speed gauge and its use. 4500 w. Bul Int Ry Cong—March, 1907. No. 83599 E.

A Universal Instrument for High-Frequency Measurements (Ein Universal-Messinstrument der Hochfrequenz-Technik). Eugen Nesper. Illustrated detailed description of instrument and method of use. 2800 w. Serial. 1st part. Elektrotech Zeitschr—Aug. 29, 1907. No. 86991 D.

Induction Type Frequency Meters. Paul MacGahan and H. W. Young. Brief illustrated description of the Graphic Recording Frequency Meter and its operation. 2000 w. Elec Age—Aug., 1907. No. 86702.

A New Frequency Meter for Wireless Telegraphy (Ein Neuer Frequenzmesser der Strahlentelegraphie). Eugen Nesper. Illustrated detailed description. 2000 w. Verkehrstech Woche u Eisenbahntechnik Zeitschr—Aug. 24, 1907. No. 86951 D.

## Galvanometers.

Factors Determining the Design of the D'Arsonval Galvanometer. L. A. Freudenberger. A mathematical analysis. 500 w. Elec Wld—Nov. 17, 1906. No. 80433.

A New Type of Alternating-Current Galvanometer of High Sensibility. W. S. Franklin and L. A. Freudenberger. From the *Physical Review*. Illustrates and describes a Kelvin astatic galvanometer modified so as to be suitable for alternating currents. 1200 w. Elect'n, Lond—Feb. 8, 1907. No. 82461 A.

A New Galvanometer. J. K. A. W. Salomonson. Trans. from *Physikalische Zeitschrift*. A description of the instrument, explaining its uses and stating its advantages. 1600 w. Elect'n, Lond—April 26, 1907. No. 84249 A.

Observation of Alternate Currents with the String Galvanometer. Gyöző Zemplén. Trans. from *Phys. Zeit.* Describes the writer's work with a small string gal-

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vanometer in measuring alternating currents. 900 w. Elect'n, Lond—Sept. 6, 1907. No. 87065 A.

## Hysteresis.

Measurement of the Hysteretic Loss at Slow Cycles. Dr. Gisbert Kapp. Describes a method that can be carried out by one observer, for which no special apparatus is needed. 600 w. Elec Engr, Lond—Feb. 15, 1907. No. 82598 A.

On a Method of Plotting the Hysteresis Loop for Iron with an Application to a Transformer. Dr. Gisbert Kapp. Describes test. 700 w. Elect'n, Lond—July 12, 1907. No. 85867 A.

## Inductance.

Measurements of Inductance and Impedance. J. Elton Young. Discusses the measurement of inductance and impedance of telegraph and telephone circuits, including overhead wires, loops, single-wire, concentric, submarine and other cables. 3000 w. Elect'n, Lond—Dec. 28, 1906. Serial. 1st part. No. 81525 A.

## Instrument Transformers.

Instrument Transformers. Charles C. Garrard. Considers the measurement of high potentials, insulation of instrument transformers, terminals of current, testing polarity, etc. Ills. 2500 w. Elec Engr, Lond—July 26, 1907. Serial. 1st part. No. 86160 A.

## Insulation.

The Temperature Coefficient of Gutta Percha (Ueber Temperatur-Koeffizienten von Gutta Percha). K. Winnertz. Experimental determination, showing that coefficient is not constant. Tables and curve. 800 w. Elektrotech Zeitschr—Nov. 29, 1906. No. 81161 B.

Measurement of Wire and Cable Insulation. F. Wachter. Explains possible methods of obtaining the correct insulation resistance per mile of a certain wire or cable. 700 w. Elec Wld—March 23, 1907. No. 83240.

Measurement of Wire and Cable Insulation. Tracy D. Waring. An article suggested by a recent paper by F. Wachter giving a summary of the sources of error met with in the measurement of cable insulation resistances. 2500 w. Elec Wld—April 20, 1907. No. 83851.

## Insulation Resistance.

A Method of Testing D. C. Networks for Insulation Resistance During Working. Daniel Shirt. Describes test, illustrating by example. 600 w. Elec Rev, Lond—Oct. 11, 1907. No. 87831 A.

# ELECTRICAL ENGINEERING

## Insulator Testor

### Insulator Testing.

A Test of Insulators for an Exceptional Service. Sidney Sprout. States the exceptional conditions to be met, describing the testing and giving results. Ills. 2500 w. Elec Ry Rev—June 15, 1907. No. 85079.

### Interrupter.

A Rotary Interrupter for Capacity Measurements. F. Kurlbaum and W. Jaeger. Abstracted from *Zeits. für Instrumentenkunde*. Illustrates and describes a rotary interrupter for high frequencies, constructed in accordance with the well-known principles of the "secohmeter" of 1887. 400 w. Elect'n, Lond—Jan. 4, 1907. No. 81643 A.

### Iron Losses.

The Separation of the Iron Losses in Asynchronous Machines. Thomas F. Wall. Shows how these losses may be separated without the use of retardation curves, and the results of experiments on a 5 h.p. motor. 2500 w. Elect'n, Lond—June 21, 1907. No. 85388 A.

### Iron Testing.

The Testing of Iron Electrically and Magnetically for Commercial Purposes. P. R. Fortin. Abstract of a paper read before the Northampton Inst. Engng. Soc. Describes the equipment and routine of a works laboratory, especially the tests for permeability and for energy losses. 1600 w. Elec Engr, Lond—March 22, 1907. No. 83417 A.

### Leakage.

Simple Zero Methods for the Direct Determination of Leakage Factors. Dr. R. Pohl. Considers simple direct methods, referring to R. Goldschmidt's method, and two methods which give accurate results, and can be used with ordinary testing instruments. 1600 w. Elect'n, Lond—May 24, 1907. No. 84751 A.

### Materials.

Selection and Testing of Materials for Construction of Electric Machinery. Prof. J. Epstein. Discusses methods of testing the materials and the completed machines, and related matters of interest. Ills. 11700 w. Inst of Elec Engrs—Nov. 22, 1906. No. 80905 N.

### Meters.

The Accuracy of Meters. H. J. Cridge. A brief discussion of methods of showing the percentage error. 800 w. Elec Engr, Lond—Dec. 7, 1906. No. 81007 A.

A New Form of Induction Ammeter or Voltmeter. Paul MacGahan. Describes the induction principle as applied to the

## MEASUREMENT

modern Westinghouse alternating-current type of meters. Ills. 9000 w. Elec Jour—Feb., 1907. No. 82493.

Polyphase Metering Conventions. M. C. Rypinski. Outlines briefly some features of the Westinghouse apparatus. Ills. 600 w. Elec Jour—Feb., 1907. No. 82491.

Warrantable Expense for Meter Testing. Oliver J. Bushnell. Read before the N.-W. Elec. Assn. Gives a brief study of conditions affecting meter accuracy, discussing methods used, and related facts, with cost. 4200 w. Elec Rev, N Y—Feb. 9, 1907. No. 82220.

Meter Testing. Oliver J. Bushnell. Considers the necessity of testing, the frequency, installation tests, and methods of testing. 3500 w. Can Elec News—March, 1907. No. 83194.

New Electricity Meter (Un Nuovo misuratore elettrico). G. B. Picco. Ills. 600 w. L'Elettricità—Jan. 18, 1907. No. 82901 D.

A New Type of Graphic Recording Meters. H. W. Young. Illustrates and describes a new type of meter which makes a record on a continuous roll of paper ruled with rectangular co-ordinates. 2500 w. Elec Rev, N Y—June 1, 1907. No. 84719.

Shunted Type of Graphic Recording Meters. Paul MacGahan and H. W. Young. An illustrated description of the construction, stating its advantages. 1800 w. St Ry Jour—Aug. 24, 1907. No. 86543.

Instruments for Testing Direct-Current Machinery. E. S. Lincoln. Gives an outline of important tests and instructions for carrying them out. 2000 w. Power—Sept., 1907. No. 86675 C.

Electrical Measuring Instruments. Explains properties which may be utilized in designing ammeters, voltmeters, and wattmeters. 1500 w. Ry Loc Engng—Sept., 1907. No. 86706 C.

A Home-Made Slide-Wire Electrical Bridge. Henry C. Ter Meer. Illustrates and describes a method of constructing a modified meter bridge. 1000 w. Sci Am Sup—Oct. 19, 1907. No. 87743.

### Motor Testing.

The Experimental Determination of the Losses in Motors. Charles F. Smith. Read before the Manchester Sec. of the Inst. of Elec. Engrs. The present number deals with direct-current motors, and the methods of separating the losses, giving tests. 3000 w. Mech Engr—April 20, 1907. Serial. 1st part. No. 83988 A.

The Commercial Testing of Series Motors. Gives schemes of connections for testing, with particular reference to those

# ELECTRICAL ENGINEERING

## Ondameter

designed for diverter control. 700 w. Elec Rev, Lond—Sept. 20, 1907. No. 87338 A.

Economical Testing of Generators and Motors. J. Lewis Cook. Briefly considers methods of testing D. C. machines in which the power developed by the machine under test is partly used to drive it. 1500 w. Elec Rev, Lond—June 7, 1907. No. 85102 A.

## Ondameter.

The Ondameter or Electric Wave Meter. Illustrated description of the construction and operation. 1000 w. Sci Am Sup—April 6, 1907. No. 83463.

## Oscillographs.

On Recording Transitory Electrical Phenomena by the Oscillograph. J. T. Morris. Describes the writer's use of the falling plate type of oscillograph. Diagrams. 1500 w. Elect'n, Lond—June 7, 1907. No. 85105 A.

Oscillographs and Some of Their Recent Applications. David A. Ramsay. Describes the more recent developments of the Duddell oscillograph, and the problems it is well adapted to investigate. Ills. Also editorial. 2800 w. Elec Wld—Nov. 24, 1906. No. 80592.

## Permeability.

The Permeability of Alloyed Irons at High Flux Densities. E. A. Watson. Describes a method of testing small samples at high flux densities, and gives results obtained on alloyed irons at densities such as commonly occur in armature teeth. 1500 w. Elect'n, Lond—Oct. 18, 1907. No. 87955 A.

## Permeameter.

The Picou Permeameter. Albert Campbell. Illustrated description of the arrangement adopted by R. T. Picou in an instrument for the magnetic testing of iron, giving results of tests. 1500 w. Elect'n, Lond—Nov. 9, 1906. No. 80483 A.

## Phase Differences.

Some Measurements on Phase Displacements in Resistances and Transformers. Charles V. Drysdale. Gives results of tests made by methods explained in an earlier article for the measurement of small differences of phase. 1800 w. Elect'n, Lond—Nov. 16, 1906. Serial. 1st part. No. 80719 A.

## Polyphase.

Polyphase Power Measurement. C. A. Adams. A simple proof of the accuracy of the two-watt meter method of measuring three-phase power. 1000 w. Elec Wld—Jan. 19, 1907. No. 81717.

## MEASUREMENT

### Power Factor.

Graphical Method of Determining Power Factor from Wattmeter Readings. A. A. Radtke. Brief explanation of method. 400 w. Elec Wld—July 20, 1907. No. 85848.

### Reactance Voltage.

Graphical Diagram for Determining the Reactance in Alternating Current Circuits. T. W. Varley. Gives a diagram, equivalent to a straight line plotted from rectangular logarithmic co-ordinates, illustrating its use by an example. 600 w. Elec Wld. Feb. 9, 1907. No. 82198.

### Resistances.

Some Notes on the Calculation of Star Resistances. Alfred Still. A study showing how to proportion the various resistances so as always to bring the shunt current into the required phase and that the most economical results will be obtained if the resistance in series with the pressure coil of the instrument be dispensed with, etc. Diagrams. 1800 w. Elec Engr, Lond—Nov. 9, 1906. No. 80477 A.

Notes on a Graphical Proof of the Rule for Comparing Resistances by the Kelvin Double Bridge. A. E. Moore. Explains a graphical proof devised by the writer which gives a clear conception of the principles involved. 1500 w. Elec Engr, Lond—Dec. 28, 1906. No. 81522 A.

### Resistance Coils.

Resistance Coils and Comparisons. C. V. Drysdale. Read before the British Assn. at Leicester. An illustrated account of the principal types of coils and methods of measurement is given, with description of some new forms. 1000 w. Elect'n, Lond—Sept. 27, 1907. Serial. 1st part. No. 87516 A.

### Resistivity.

Resistivity-Temperature Formulæ for Copper. Dr. F. B. Crocker. Shows that there is considerable difference of usage among electrical engineers. 1500 w. Elec Wld—Feb. 23, 1907. No. 82541.

### Secohmmeter.

The Use of the Secohmmeter for the Measurement of Combined Resistances and Capacities. S. R. Milner. Briefly describes this instrument and explains its use in the field named. 3800 w. Elect'n, Lond—Oct. 26, 1906. No. 80304 A.

### Speed-time Curves.

The Plotting of Speed-time Curves. A. S. Langsdorf. Gives a method, based on rigid laws of the calculus, requiring no

# ELECTRICAL ENGINEERING

## Stray Currents

approximations, and giving results quickly. 300 w. *Elec Wld*—May 18, 1907. No. 84417.

## Stray Currents.

The Measurement of the Density of Stray Currents in the Earth (Ueber die Messung der Dichtigkeit Vagabundierender Ströme im Erdreich). F. Haber and K. Liese. An illustrated account of extensive experiments at Karlsruhe, Germany, with plate electrodes covered with an electrolytic paste. Maps. Tables. 10000 w. *Zeitschr f Elektrochem*—Nov. 16, 1906. No. 81123 G.

## Switchboards.

A Testing Switchboard. Describes the general arrangement of a board designed for testing direct-current motors and dynamos. Ills. 1000 w. *Elec Rev, Lond*—Aug. 30, 1907. No. 86861 A.

Switchboards for Testing Work. Leonard Solomon. Considers the design of switchboards used for testing purposes, and describes the switchboard at present in use at the Central Technical College. Ills. 2800 w. *Elect'n, Lond*—July 12, 1907. No. 85864 A.

## Synchroscope.

The Synchroscope. D. H. Cohen. A description of the construction, and more particularly the operation, of this instrument. 800 w. *Elec Wld*—May 4, 1907. No. 84209.

The Synchroscope. S. R. Dodds. Diagram and description of its operation. 1000 w. *Elec Wld*—Aug. 17, 1907. No. 86432.

## Temperature.

Heating of Wires with Temporary Current Rush. Explains a method of calculating the rise of temperature of wires caused by an excessive current flowing for a short time. 600 w. *Prac Engr*—Jan. 4, 1907. No. 81631 A.

## Testing Machinery.

Rules Concerning the Acceptance and Testing of Electric Machines, Transformers and Apparatus (Règles Concernant la Réception et les Essais des Machines, Transformateurs et Appareils Electriques). Regulations of the Milan Association of Users of Electrical Energy. 2800 w. *L'Elec'n*—March 23, 1907. No. 83688 D.

## Testing Plant.

The Arrangements of the Testing Station at Frankfurt (Die Einrichtungen des Elektrischen Prüfamtes in Frankfurt). Rudolf Kopp. Describes an elaborate plant for the testing of electric machin-

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ery and apparatus. Ills. 7000 w. Serial. 2 parts. *Elektrotech Zeitschr*—May 16 and 23, 1907. No. 84986 each B.

A Brief Description of the Testing Department of the General Electric Company; (Schenectady Works). E. L. Simpson. Descriptive of the training given students in this department. Ills. 6000 w. *Purdue Engng Rev*—1907. No. 85939 N.

## Thermo-Couple.

Commercial Temperature Measurements with the Thermo-Electric Couple. Anthony Zeleny. Describes apparatus for the accurate measurement of ordinary temperatures by the direct deflections method, considering the problems in connection with the development of pyrometry. Ills. 3500 w. *Engrs' Soc of Univ of Minn*—Year Book, 1907. No. 84627 N.

## Three-Phase.

The Measurement of Three-Phase Electrical Power and Energy. Prof. I. H. Dobson. Considers the magnitudes and phase relationships which exist between the currents which flow in each of the phases and in the distributing lines, and the electro-motive forces between the lines and each phase, discussing the actual measurements of power and energy. 3500 w. *Jour S African Assn of Engrs*—Sept. 1906. No. 80290 F.

Measurement of Power in Three-Phase Systems (Notiz über die Leistungsmessung in Drehstrom-Systemen mit Nulleiter). E. Orlich. Mathematical discussion. 500 w. *Elektrotech Zeitschr*—Jan. 24, 1907. No. 82341 B.

Measurement of Power in Three-Phase Circuits (Leistungsmessungen bei Drehstrom). F. E. Mathematical paper. Diagrams. 1600 w. *Elektrotechnik und Maschinenbau*—Jan 6, 1907. No. 82300 D.

## Time.

Electric Measurement of Brief Intervals of Time. A detailed explanation of the method used. 1200 w. *Elec Rev, Lond*—Jan. 4, 1907. No. 81637 A.

## Transformer Testing.

Loading Stationary Induction Apparatus for Heat Tests. George C. Shaad. Describes testing transformers in pairs, and in threes, testing feeder regulators, and induction regulators. Diagrams. 1200 w. *Elec Jour*—June, 1907. No. 85132.

A New Method of Artificially Loading Transformers (Eine Neue Methode zur Künstlichen Belastung von Transformatoren). Axel F. Gustrin. Gives diagrams illustrating the wiring arrangements for



# ELECTRICAL ENGINEERING

## Units

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## Cables

this method of testing transformers, in which the transformer under test is self-loading. 1600 w. *Elektrotech Zeitschr*—June 6, 1907. No. 85684 D.

Notes on Transformer Testing. H. W. Tobey. Describes methods adopted in commercial transformer testing which have proved satisfactory, explaining their advantages and shortcomings. 3500 w. *Pro Am Inst of Elec Engrs*—June, 1907. No. 85758 D.

On Transformer Indicator Diagrams. T. R. Lyle. Abbreviated paper, read before the Physical Soc. Describes the use of the author's wave tracer and analyzer. 2500 w. *Elect'n, Lond*—Oct. 11, 1907. No. 87834 A.

## Units.

Electric Units (Conferencia sobre Unidades Eléctricas). D. J. M. de Madariaga. Read before the Instituto de Ingenieros Civiles. Mathematical discussion. 1500 w. *Serial. 1st part. La Energia Eléctrica*—April 10, 1907. No. 84124 E.

Units and Standards. Editorial on the standardization of electrical units. 2200 w. *Engng*—Nov. 23, 1906. No. 80837 A.

Report of the British Association Committee on Practical Standards for Electrical Measurements. 4500 w. *Elect'n, Lond*—Aug. 16, 1907. No. 86593 A.

Electrical Laws and Units. Explains the meaning of the fundamental electrical units in common use. 1000 w. *Ry & Loc Engng*—June, 1907. No. 84775 C.

A New Determination of the Ratio of the Electromagnetic to the Electrostatic Unit of Electricity. E. B. Rosa and N. E. Dorsey. Gives work undertaken to make a new determination of the value of V, using the method of capacities. Ills. 21000 w. *Bul Bureau of Stand*—Aug., 1907. No. 87702 N.

What is a Watt? George Sherwood Hodgins. An explanation of this electrical term. 1400 w. *Ry & Loc Engng*—April, 1907. No. 83532 C.

## Voltage.

Voltmeter Compensator for Direct-Current Circuits. F. E. Haskell. Describes a scheme employed with direct-current equipment which enables the station voltmeter to indicate the e.m.f. at the distribution point. 800 w. *Elec Wld*—May 25, 1907. No. 84609.

## Voltage Drop.

A Graphical Method of Determining the Voltage Drop in Power Distribution Systems. T. L. Kolkin. Explains method, dealing with cases in common practice. 1500 w. *Elec Rev, Lond*—Oct. 11, 1907. No. 87832 A.

## Wattmeters.

Siemens & Halske Improved Wattmeter (Das Drehstrom Wattmeter der Siemens & Halske, A. G.; und eine Neukonstruktion ihres Präzisions-Wattmeters). Hilmar Sack. Detailed description of the instruments and calculation of their limits of accuracy. Illus. 2000 w. *Elektrotechnische Zeitschrift*—March 21, 1907. No. 83650 B.

The Standardizing Laboratory. H. B. Taylor. The present article discusses a testing circuit for alternating-current wattmeters, Ills. 2000 w. *Elec Jour*—Nov., 1906. No. 80285.

Hot-Wire Wattmeters and Oscillographs. J. T. Irwin. Describes a new type of polarized hot-wire instrument invented by the author, and some of the uses to which it can be applied. 7500 w. *Inst of Elec Engrs*—May 23, 1907. No. 85037 N.

Elements Affecting the Accuracy of Induction Type Watt-Hour Meters. H. W. Young. Illustrates and describes an improved bearing of the "rolling" type, explaining its advantages, and an improved method of light load adjustment. 3500 w. *Elec Wld*—June 29, 1907. No. 85351.

## Wheatstone Bridge.

Notes on the Calibration of a Wheatstone Box Bridge. B. E. Smith. Outlines a scheme worked out for the purpose of calibrating a box bridge which was to be used in investigating the electromotive forces developed in thermoelectric couples by small differences of temperature. 1500 w. *Engrs' Soc of Univ of Minn—Year Book*, 1907. No. 84634 N.

The Wheatstone Bridge. Dana Pierce. Describes the connections and arrangement and use for measuring resistance, explaining the principle it involves. 1600 w. *Engr, U S A*—May 15, 1907. No. 84409 C.

# TRANSMISSION

## Cable Breakdown.

The Accident to Sydney Tramway Feeders. An illustrated account of a breakdown caused by the dragging of a feeder cable by a ship's anchor. 1200 w.

*Elec Rev, Lond*—Oct. 4, 1907. No. 87589 A.

## Cables.

Some Notes on Underground Mains. W. M. Rogerson. Abstract of a paper

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## Cables

read before the Leeds Loc. Sec. of the Inst. of Elec. Engrs. Briefly describes the various methods of laying cables underground and the maintenance of mains, giving the author's experiences. 4500 w. *Elect'n*, Lond—April 5, 1907. No. 83740 A.

The Depreciation of Underground Cables. F. Fernie. Discusses the different single cable systems and their relative advantages as regards depreciation. 3300 w. *Elec Rev*, Lond—April 5, 1907. No. 83739 A.

An Investigation of the Loss of Voltage in Cables (Untersuchung über den Spannungsverlust in Kabeln). E. Stirnimann. A theoretical discussion of the losses of voltage in cables of large section, illustrated by curves, tables and diagrams. 7000 w. Serial, 2 parts. *Elektrotech Zeitschr*—June 6 and 13, 1907. No. 85685 each D.

Practical Notes on Plumbed Joints. W. Pleasance. Instructions in regard to lead-covered cables. 1800 w. *Elec Engr*, Lond—Oct. 4, 1907. No. 87588 A.

See also same title, under DISTRIBUTION.

## Conduits.

A Method of Laying Vitrified Conduits for Electrical Cables, and a Collapsible Core for Forming Conduits in Concrete Without the Use of Vitrified Ducts. F. Lavis. Describes work in the Pennsylvania Railroad tunnels and methods used. Ills. 1200 w. *Eng News*—Oct. 3, 1907. No. 87423.

## Development.

Development in Electrical Transmission. F. A. C. Perrine. A review of the extension of lines and plants, and some of the difficulties. 1600 w. *Elec Rev*, N Y—Jan. 12, 1907. No. 81592.

## Direct Current.

Direct-Current High-Voltage Transmission from Moutiers to Lyons, France (Gleichstrom - Hochspannungs - Kraftübertragung Moutiers-Lyon). Illustrated description of system and apparatus. Voltage is 57,000; distance, 110 miles. Also, table showing all D. C. transmissions on Thury system. 2000 w. *Elektrotech Zeitschr*—Nov. 22, 1906. No. 81158 B.

The Transmission of Electrical Energy by Direct Current on the Series System. J. S. Highfield. Shows that M. Thury has carried the direct-current series system far beyond the experimental stage and has made great advancement in the improvement of direct-current generators and motors and in the use of very high

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## European Practice

pressures. Describes the system and gives information regarding cost. Ills. 9600 w. *Inst of Elec Engrs*—March 7, 1907. No. 83109 N.

High-Pressure D. C. Transmission. Calls attention to some things to be considered in connection with the series system of direct-current power transmission. 1600 w. *Elec Rev*, Lond—June 7, 1907. No. 85103 A.

Critical Remarks on Electric Power Transmission by High-Pressure Direct Current (Kritische Betrachtungen über das System der Elektrischen Kraftübertragung mit Hochgespanntem Gleichstrom). A criticism of the paper on the series system of high-tension, direct-current transmission read by J. S. Highfield before the Institution of Electrical Engineers, March 7, 1907. Ills. 3000 w. *Elektrotech u Maschinenbau*—June 23, 1907. No. 85662 D.

Critical Consideration of the High-Tension Direct-Current System of Electric Power Transmission. Abstract of an article in *Elektrotechnik und Maschinenbau*, discussing critically Mr. Highfield's recent paper. 1200 w. *Elect'n*, Lond—July 26, 1907. No. 86167 A.

The Fleury Direct-Current Transmission System. D. Kos. A discussion of the principal features and its possibilities. Also editorial. 8500 w. *Elec Wld*—Oct. 26, 1907. No. 87949.

## Economics.

Some Power Transmission Economics. Frank G. Baum. Illustrates and describes examples of line and switch construction to show that the best solution of a problem is the one which accomplishes the purpose satisfactorily with the least amount of money, on account of changes in design which become apparent as the industry develops. 1600 w. *Pro Am Inst of Elec Engrs*—May, 1907. No. 85283 D.

## European Lines.

Some Examples of Power Transmission in Central Europe (Quelques Transports d'Energie de l'Europe Centrale). Alfred Lambotte. Illustrates and describes hydro-electric, steam and gas Central Europe, the information being collected during an extensive tour. 40000 w. *Soc Belge d'Elec'ns*—Aug., 1907. No. 86912 E.

## European Practice.

Present Status of European Practice in Transmission Line Work. Notes on the latest practice in Switzerland and Italy, with map of the Milan district. Also editorial. 3000 w. *Elec Wld*—Dec. 22, 1906. No. 81217.

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### Frequency Changers

#### Frequency Changers.

Frequency Changers. J. P. Jollyman. Considers some of the operating features of 60 to 25, or 25 to 60 cycle synchronous frequency changers. 1200 w. Elec Wld—April 6, 1907. No. 83500.

#### Grounded Neutral.

Potential Stresses as Affected by Overhead Grounded Conductors. R. P. Jackson. Introduction to a discussion. A theoretical investigation of the potential gradients and the equipotential surfaces about grounded conductors suspended in the air, and about metallic towers for transmission lines. 1500 w. Pro Am Inst of Elec Engrs—April, 1907. No. 84517 D.

Earthing the Neutral Point. E. V. Shaw. Explaining the advantages of the automatic earth switch invented by the writer. 1200 w. Elec Rev, Lond—Oct. 18, 1907. No. 87954 A.

The Grounded Neutral, With and Without Series Resistance, in High-Tension Systems. Paul M. Lincoln. Discusses, from the viewpoint of the operating engineer, the advantages and disadvantages of a grounded neutral. 4000 w. Pro Am Inst of Elec Engrs—Sept., 1907. No. 87-719 D.

Experience with a Grounded Neutral on the High-Tension System of the Interborough Rapid Transit Company. George I. Rhodes. Explains conditions which led to the grounding of the neutral, and reports successful results. 1500 w. Pro Am Inst of Elec Engrs—Sept., 1907. No. 87720 D.

The Grounded Neutral. F. G. Clark. Gives reasons for grounding in the design of a high-tension installation, the reasons for and against the introduction of resistance, and facts relating to the operation. 2000 w. Pro Am Inst of Elec Engrs—Sept., 1907. No. 87721 D.

#### High-Tension.

Recent Practice in Electrical Transmission of Power. W. B. Esson. Discusses the economy of raising the pressure, and the pressures permissible, the design of insulators, switches, etc. Ills. 4000 w. Engr, Lond—Dec. 14, 1906. No. 81252 A.

High-Tension Outlets. Alvin Meyers. An illustrated article describing work for the Telluride Power Co., tests carried out, and the design of bushing to meet stated requirements, giving specifications for constructing and installing 44,000-volt outlet bushings. 3800 w. Pro Am Inst of Elec Engrs—Feb., 1907. No. 83046 D.

A Suggestion for a High-Tension Wire Entrance. H. C. Reagan. Illustrates and

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describes the outlets adopted for the Pittsburg & Butler Street Ry. Co. which give air insulation. 700 w. Elec Ry Rev—Aug. 17, 1907. No. 86441.

Pressure Rise on High-Tension Transmission Lines. E. Hudson. Read before the Dick-Kerr Engng Soc. Discusses the direct causes of pressure rise. 2000 w. Elec Engr, Lond—March 22, 1907. No. 83416 A.

Relays for the Control of High-Tension Switchgear. Charles C. Garrard. Discusses points which have proved of importance in experience with the apparatus used in the control of automatic switchgear on high-tension systems. 3500 w. Elec Engr, Lond—April 26, 1907. No. 84245 A.

Recent Italian High-Tension Experiments. Frank C. Perkins. Brief illustrated account of interesting and instructive experiments with pressures ranging from 160,000 volts to 320,000 volts. 1000 w. Prac Engr—Sept. 20, 1907. No. 87-330 A.

Line Constants and Abnormal Voltages and Currents in High-Potential Transmissions. Ernst J. Berg. Gives equations for determining these constants, and methods of calculating phenomena by their help. 3500 w. Pro Am Inst of Elec Engrs—Sept., 1907. No. 87718 D.

Experiments with High Potentials. An illustrated account of some high-tension experiments at the Milan Congress conducted by E. Jona on cables and aerial lines with exceedingly high potentials. Also editorial. 2000 w. Elec Wld—Jan. 26, 1907. No. 81942.

A Year's Operation of the Highest Working Voltage in the World. F. E. Greenman. Read at the Mich. Elec. Assn. Con. Brief account of the operating of the Grand Rapids-Muskegon Power Company's transmission line at 72,000 volts. Ills. 1200 w. Elec Wld—Sept. 14, 1907. No. 87036.

#### Insulation.

Rubber Insulation. William A. Del Mar. Briefly discusses the adulteration, vulcanization, and quality of rubber, and other matters determining its suitability for insulating uses. 3000 w. Elec Age—April, 1907. No. 83955 C.

See also same title, under DISTRIBUTION; and also under MEASUREMENT.

#### Insulators.

A New Type of Insulator for High-Tension Transmission Lines. E. M. Hewlett. Illustrated description of "link insulators" of the suspension and strain type. 500 w. Pro Am Inst of Elec Engrs—June, 1907. No. 85759 D.

### Insulators

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Some New Methods in High-Tension Line Construction. H. W. Buck. Describes a method of line construction believed to offer a means of operating a line safely at higher potentials than is practicable with insulators of the pin and petticoat type. 1000 w. Pro Am Inst of Elec Engrs—June, 1907. No. 85760 D.

Three New Electrical Devices. Illustrates and describes two new insulating devices, and a horizontal support for conductors, recently patented by Louis Steinberger. 1500 w. Sci Am Sup—Aug. 10, 1907. No. 86305.

High-Tension Insulators, from an Engineering and Commercial Standpoint. C. E. Delafield. Read at Montreal meeting of the Can. Elec. Assn. Discusses the requirements of insulators for high voltages. 3000 w. Elec Rev, N. Y.—Sept. 28, 1907. No. 87301.

See also same title, under DISTRIBUTION; and also under MEASUREMENT.

## Leakage.

The Localization of Earth Leakages on a Three-Wire Network. W. A. Toppin. Discusses systems for the actual location of the leakages, giving diagrams. 2000 w. Elec Engr, Lond—April 12, 1907. No. 83870 A.

## Lightning Arresters.

New Principles in the Design of Lightning Arresters. E. E. F. Creighton. The first of two papers discussing the new features of a new multigap arrester. Ills. 4000 w. Pro Am Inst of Elec Engrs—April, 1907. No. 84510 D.

A Proposed Lightning-Arrester Test. N. J. Neall. Describes the proposed test, illustrating it by wiring diagrams, and explaining its advantages. 800 w. Pro Am Inst of Elec Engrs—June, 1907. No. 85757 D.

Practical Testing of Commercial Lightning-Arresters. Percy H. Thomas. Discusses what tests should be incorporated in the standardization rules of the Am. Inst. of Elec. Engrs. 13000 w. Pro Am Inst of Elec Engrs—June, 1907. No. 85756 D.

The Electrolytic Lightning Arrester. R. P. Jackson. Illustrates and describes the electrolytic or aluminum-cell arrester. 700 w. Elec Jour—Aug., 1907. No. 86401.

## Lightning Protection.

Recent Investigation of Lightning Protective Apparatus. R. P. Jackson. Outlines the characteristics of lightning as manifested on electric circuits and recent investigation as to what characteristics protective devices should possess and to

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what degree they have been found in practice to possess them. 4500 w. Pro Am Inst of Elec Engrs—Dec., 1906. No. 81908 D.

Discussion on "Recent Investigation of Lightning Protective Apparatus" at New York, December 28, 1906. Discussion of R. P. Jackson's paper on this subject. 10800 w. Pro Am Inst of Elec Engrs—Feb., 1907. No. 83048 D.

Multi-Gap Lightning Arresters with Ground Shields. R. B. Ingram. Calls attention to phenomena in the operation of lightning arresters of the multi-gap type regarding the effect of variation in the relative position of the multi-gaps and the ground and the distance between them, and explains the use of the ground shield as a remedy. 1700 w. Elec Jour—April, 1907. No. 83583.

Protection Against Lightning, and the Multigap Lightning Arrester. David B. Rushmore and D. Dubois. On the most recent developments in the multigap lightning arrester, giving recommendations concerning the protection of transmission lines and electrical apparatus from lightning disturbances. Ills. 7000 w. Pro Am Inst of Elec Engrs—April, 1907. No. 84509 D.

Lightning Rods and Grounded Cables as a Means of Protecting Transmission Lines Against Lightning. Norman Rowe. Introductory to a discussion. A summary of lightning troubles during the years 1904, 1905, and 1906, on a steel tower, long span transmission line in Mexico. Ills. 2200 w. Pro Am Inst of Elec Engrs—May, 1907. No. 85280 D.

A Permanent-Leak Water Lightning Arrester. Lewis W. Dixon. Illustrated description of a water lightning arrester, recently erected in Wales. 700 w. Elect'n, Lond—May 24, 1907. No. 84752 A.

Ground Wires and Choke-Coils for Lightning Protection. D. S. Carpenter. Considers that the overhead ground wire with lightning arresters at intervals along the line affords the best possible protection. 1200 w. Elec Wld—July 20, 1907. No. 85849.

Protective Apparatus Engineering. E. E. F. Creighton. Describes methods which have been in use in the development of lightning apparatus. 15600 w. Pro Am Inst of Elec Engrs—June, 1907. No. 85755 D.

Lightning Phenomena in Electric Circuits. Charles P. Steinmetz. Explains the most general meaning of lightning, discussing in detail the phenomena of abnormal voltage and frequency in electric circuits, showing how vast is the problem.

# ELECTRICAL ENGINEERING

## Line Calculations

Diagrams. 5000 w. Pro Am Inst of Elec Engrs—March, 1907. No. 83763 D.

Discussion on "Lightning Phenomena in Electric Circuits," "Protection Against Lightning, and the Multigap Lightning Arrester," and "New Principles in the Design of Lightning-Arresters" at New York, March 29, 1907. Papers by Charles P. Steinmetz, D. B. Rushmore, D. Du-bois, and others, are discussed. 8000 w. Pro Am Inst of Elec Engrs—Aug., 1907. No. 87147 D.

Lightning Phenomena in Electric Circuits. J. C. Peebles. A discussion of the effects of lightning upon electric conductors, confined mostly to large power transmission lines. 3000 w. Sib Jour of Engng—May, 1907. No. 84558 C.

## Line Calculations.

The Calculation of Transmission Lines. Harold Pender. Gives formulæ and tables devised to furnish a simple and accurate method for making the necessary calculations. 1500 w. Elec Age—Sept., 1907. No. 87261.

## Line Extensions.

Extension of Electricity Supply to Out-lying Districts. R. L. Acland. Abstract of a paper read before the Incorporated Municipal Electric Association. Describes the scheme adopted for supplying a district,  $2\frac{1}{2}$  miles from the power house, with power for electric lighting. 1500 w. Mech Engr—July 13, 1907. No. 85858 A.

## Line Troubles.

Location of Broken Insulators and Other Transmission Line Troubles. L. C. Nicholson. Introductory to a discussion. Explains a method of locating faults consisting of supplying current from a generator and transformer to the fault to earth through a divided circuit or a loop, formed by joining two line conductors together at both ends, one of the wires so connected containing the broken insulator to be located. Ills. 2700 w. Pro Am Inst of Elec Engrs—May, 1907. No. 85281 D.

## Lines.

The Development and Operation of a Large Electric Transmission and Conversion System. Ernest F. Smith. Refers particularly to the systems of the Chicago Edison and Commonwealth Electric companies as representing the best American practice. Discussion. Ills. 12900 w. Jour W Soc of Engrs—June, 1907. No. 85726 D.

The 50,000-Volt Line of the Taylor's Falls-Minneapolis Power Transmission. Illustrated description of this pole line

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40.6 miles long, designed to carry the total present capacity of the plant. 1300 w. Elec Wld—Sept. 7, 1907. No. 86841.

System at Minneapolis for Distributing the Energy Transmitted from Taylor's Falls. Illustrates and describes the provisions made in Minneapolis for receiving and distributing the electrical energy. 1800 w. Elec Wld—Oct. 5, 1907. No. 87486.

Single-Phase Catenary Line Construction. G. D. Nicoll. Read before the Cent. Elec. Ry. Assn. Deals with a catenary construction for the operation of high-voltage alternating-current electric railways. 1200 w. Elec Ry Rev—Sept. 28, 1907. No. 87299.

See also Wires, under COMMUNICATION; and Hydro-Electric, under GENERATING STATIONS.

## Long Distance.

Long-Distance Power Transmission with Direct Currents. C. T. Wilkinson. Gives a detailed account of the latest developments of the work of M. Thury. Ills. 3000 w. Cassier's Mag—Jan., 1907. No. 81782 B.

Motor-Generators vs. Synchronous Converters, with Special Reference to Operation on Long-Distance Transmission Lines. P. M. Lincoln. A paper introductory to a discussion of this subject, making a comparison of reliability, voltage regulation, corrective effect, efficiency, cost, parallel operation and starting. 1000 w. Pro Am Inst of Elec Engrs—Feb., 1907. No. 83049 D.

## Losses.

Drop in Alternating-Current Circuits. Charles F. Scott and Clarence P. Fowler. Describes a modification of the usual method of finding the drop. Tables and diagrams. 1200 w. Elec Jour—April, 1907. No. 83584.

The Losses in Heavy Alternating Current Cables. Abstract translation of an article by E. Stirnimann in the *Elektrotechnische Zeit*, describing experiments on the increased resistance offered to alternating currents by cables of large section. 1000 w. Elec Rev, Lond—Oct. 11, 1907. No. 87830 A.

See also same title, under DISTRIBUTION.

## Niagara.

Canadian Niagara Power Company's Transmission to Buffalo. Illustrated description of novel features in the long crossing of the transmission lines, and of terminal station "B" of the Cataract Power & Conduit Co. 2500 w. Elec Wld—June 20, 1907. No. 85349.

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## Phasing

The Transmission Plant of the Niagara, Lockport and Ontario Power Company. Ralph D. Mershon. Illustrated detailed description of line construction and stations. 4500 w. Pro Am Inst of Elec Engrs—Sept., 1907. No. 87717 D.

## Phasing.

Problem in Phasing. J. P. Jollyman. An illustration of a simple method of solving phasing problems. 400 w. Elec Wld—Aug. 3, 1907. No. 86150.

## Poles.

Strains in Pole Lines. Aug. J. Bowie, Jr. Especially a study of the stresses due to the breakage of line wires, and the design of a pole line as an engineering structure. 2200 w. Elec Wld—Nov. 17, 1906. No. 80431.

The Use of Wooden Poles for Overhead Power Transmission. C. Wade. Illustrated report of tests made of A poles and of single poles, with appendix by Prof. Goodman. 6500 w. Inst of Elec Engrs—May 2, 1907. No. 84479 N.

Wood Pole Line Construction. A. B. Lambe. Discusses in detail the main and standard points in wood pole line construction. 6500 w. Can Elec News—Sept., 1907. No. 86821.

High-Tension Overhead Lines on Iron Masts. From a paper by Herr L. Kallir, in *Elektrotechnik und Maschinenbau*, discussing the advantages of employing iron masts for the whole line in large long-distance transmission schemes. 1200 w. Elec Engr, Lond—Nov. 16, 1906. No. 80714 A.

High Voltage Transmission Lines with Iron Masts (Ueber Hochspannungsleitungen mit Eisernen Masten). Ludwig Kallir. Discussion of long spans and iron towers or masts, and illustrated description of such lines now in use. Serial. 2 parts. 6500 w. *Elektrotech u Maschinenbau*—Oct. 21 and 28, 1906. No. 80669 each D.

The Siegwart Concrete Pole. (Der Siegwart-Zementmast). S. Herzog. Reinforced concrete mast for electric wires, made by a new process devised by Hans Siegwart, of Lucerne. Illus. 1300 w. Dec. 23, 1906. No. 81829 D.

Reinforced-Concrete Towers for High-Potential Transmission Line. F. W. Scheidenhelm. Illustrated detailed description of two recently completed reinforced-concrete towers, at Brownsville, Pa., for supporting a line across the Monongahela River. 2800 w. Eng News—May 2, 1907. No. 84041.

Experiments with Concrete Telegraph Poles. G. A. Cellar. Read before the

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Assn. of Ry. Tel. Supts. Also tests by Robert A. Cummings. Ills. 5500 w. Cement Age—Aug., 1907. No. 86483.

See also under same title, under COMMUNICATION; Concrete Towers, under CIVIL ENGINEERING, CONSTRUCTION; and Concrete Pipes and Timber Preservation, under CIVIL ENGINEERING, MATERIALS OF CONSTRUCTION.

## Polyphase.

Polyphase Systems of Generation, Transmission and Distribution. M. A. Sammett. Considers the two-phase and three-phase systems, comparing their advantages and the two principal frequencies. 4000 w. Can Soc of Civ Engrs, Adv Proof—Nov. 15, 1906. No. 80547 D.

## Resistance.

No-Load and Short-Circuit Resistance of Alternating-Current Cables (Leerlauf- und Kurzschlusswiderstand von Wechselstromkabeln). Carl Breitfeld. A mathematical and theoretical discussion. Ills. 4500 w. *Elektrotech u Maschinenbau*—Sept. 15, 1907. No. 87633 D.

## Self Induction.

Oscillations of High Pressure and Frequency in Continuous-Current Circuits (Ueber Schwingungen mit hoher Spannung und Frequenz in Gleichstrom-Netzen). Dr. R. Hiecke. Mathematical discussion of an article with the same title by Herrn Feldmann and Herzog, Sept., 1906. Diagrams. 3300 w. *Elektrotech Zeitschr*—April 11, 1907. No. 84171 D.

## Single Phase.

One-Phase High-Tension Power Transmission. E. J. Young. Proposes a high-tension one-phase system having several desirable features not in common with either the direct-current or the three-phase system. 1500 w. Pro Am Inst of Elec Engrs—May, 1907. No. 85282 D.

## Spans.

Long Spans for Power Transmission Lines. T. L. Kolklin. An investigation to determine which length of span will make the cheapest pole line for the various sizes of wires. 700 w. Elec Rev, Lond—Dec. 28, 1906. No. 81523 A.

Transmission Line Towers and Economical Spans. D. R. Scholes. Introductory to a general discussion. Describes a method by which the relation between the height, strength, and cost of a tower of given form may be expressed and its application to the problem of fixing the economical span for any given transmission line. 3300 w. Pro Am Inst of Elec Engrs—May, 1907. No. 85279 D.

Simple Formulae for the Relations Be-

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## Sub-Stations

tween Deflection, Tension and Temperature in Wire Spans. Harold Pender. Approximate formulæ for determining changes due to temperature. 500 w. Elec Wld—Jan. 12, 1907. No. 81620.

Tension and Sag in Wire Spans. Harold Pender. Gives charts devised to obtain a graphical solution of equations deduced by the author in an article published Jan. 12, 1907. 1300 w. Elec Wld—Sept. 28, 1907. No. 87321.

The Suspension of Wires (Ueber den Durchhang von Freileitungen). G. Nicolaus. Discusses particularly telegraph lines, showing the tension which should be placed on the wires to prevent too free swing, with formula. Ills. Tables and curves. 3200 w. Serial. 1st part. Elektrotech Zeitschr—Sept. 12, 1907. No. 87658 D.

## Sub-Stations.

A Note on Sub-Station Cable Arrangement. W. Pleasance. Notes on methods of securing a regular arrangement of cables inside the sub-station to avoid confusion, waste, and dangerous troubles. 600 w. Elec Engr, Lond—Sept. 6, 1907. No. 87056 A.

The Connection of Cables to Switchboards in Underground Sub-Stations. W. Pleasance. Brief notes on some of the small but important details of underground sub-stations. Ills. 800 w. Elec Engr, Lond—Sept. 20, 1907. No. 87333 A.

Sub-Station Troubles. A. Wohlgemuth. Considers troubles caused by a breakdown at the generator plant, and causes and effects of local troubles. 2400 w. Power—Oct., 1907. No. 87265 C.

Three-Phase Power Supply of the Manchester Corporation. Gives a typical sub-station plan for alternating-current supply only, describing the method. Ills. 1800 w. Elect'n, Lond—Aug. 23, 1907. Serial. 1st part. No. 86722 A.

Sub-Station Equipment and Operation, Chicago Edison Company and Commonwealth Electric Company. R. G. Grant. Describes the equipment of a standard sub-station, tracing the current from the transmission line to the center of distribution. 3000 w. Elec Wld—July 27, 1907. No. 85959.

The Rotary Converter Sub-Station. R. F. Schuchardt. Describes the essential constructional details of these stations and the manner of operating them in Chicago. General discussion. Ills. 7800 w. Jour W Soc of Engrs—June 1, 1907. No. 85725 D.

## Subways.

The Aberdeen Electric Cable Subway. Illustrated description of a subway a mile

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long, built in Scotland to carry feeder and pilot cables. 1000 w. Eng Rec—Jan. 26, 1907. No. 81953.

Underground Work for Telephone Cables in Bavaria. (Die vollständig unterirdische Zuführung den Teilnehmerleitungen in den Orts-Fernsprechanlagen Bayerns). Wilhelm Schreiber. Description of conduit, outlet boxes, circuits, etc. Ills. Serial. 2 parts. 6600 w. Elektrotechnische Zeitschrift—Dec. 13 and 20, 1906. No. 81836 each B.

## Sweden.

The Tofwehult Westerwik Transmission System, Sweden. Arvid Westerberg. An illustrated article outlining interesting details of an installation for transmitting energy from the waterfall at Tofwehult, where small power is utilized with regard to low charges. 1500 w. Elec Wld—Sept. 28, 1907. No. 87319.

## Three-Phase.

Neutral Currents of a Three-Phase Grounded System. George I. Rhodes. Considers causes producing phase displacement and variation in magnitude of the generated e. m. f. waves. 1200 w. Elec Jour—July, 1907. No. 85707.

## Transformers.

Protection of the Internal Insulation of a Static Transformer Against High-Frequency Strains. Walter S. Moody. Introductory to a general discussion. Explains how a theory that very little preventive reactance is necessary to protect the winding of a transformer whose outer turns are heavily insulated has been carried out and tested on a large scale. Ills. 1000 w. Pro Am Inst of Elec Engrs—May, 1907. No. 85278 D.

Choke-Coils versus Extra Insulation on the End-Windings of Transformers. S. M. Kintner. Introductory to a general discussion. States the advantages and disadvantages of separate choke-coils. 1200 w. Pro Am Inst of Elec Engrs—May, 1907. No. 85277 D.

Single-Phase Currents from Three-Phase Supply. Alfred Still. Deals with the relative efficiencies of alternative arrangements involving the use of one, two or three-phase windings on the primary side of transformers. 2500 w. Elect'n, Lond—Nov. 9, 1906. No. 80482 A.

The Transformation of Electrical Energy. C. Francis Harding. Considers in detail the direct and alternating current transformations which are necessary that the electrical energy may be distributed over a broad area in small units for varying uses. 3000 w. Sib Jour of Engng—Feb., 1907. No. 82499 C.

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## Transformers

Three-Phase Transformation. A. S. McAllister. Discusses the relative merits of the three-phase transformer and the combination of single-phase transformers that may be employed for the same service. Also editorial. 2500 w. Elec Wld—Feb. 9, 1907. No. 82199.

Practical Notes on Transformer Testing. Ernest A. Reid. Read before the Dick-Kerr Engng. Soc. Describes the tests made by the makers before they leave the shop. 2500 w. Elec Engr, Lond—Feb. 1, 1907. No. 82242 A.

Forced-Oil and Forced-Water Circulation for Cooling Oil-Insulated Transformers. C. C. Chesney. Short paper introductory to a discussion. 500 w. Pro Am Inst of Elec Engrs—April, 1907. No. 84515 D.

Relative Advantages of One-Phase and Three-Phase Transformers. John S. Peck. Considers the various advantages and disadvantages of a three-phase transformer as compared with a group of three one-phase transformers whose aggregate output is the same. Introductory to a discussion. 1600 w. Pro Am Inst of Elec Engrs—April, 1907. No. 84514 D.

Relative Merits of Three-Phase and One-Phase Transformers. H. W. Tobey. Short paper to introduce discussion, outlining the two systems and pointing out the advantages and limitations of each. 800 w. Pro Am Inst of Elec Engrs—April, 1907. No. 84513 D.

Abnormal Primary Current and Second Voltage on Placing a Transformer in Circuit. Trygve Jensen. Gives results of investigations made of the values of the primary current and the secondary e. m. f. when the primary circuit of a transformer is closed at different pre-determined time-phase positions of the supply e. m. f. 1600 w. Elec Wld—Sept. 14, 1907. No. 87033.

Outline of the Characteristics of Constant Potential Transformers. George A. Burnham. Outlines briefly the important factors and considers the action of the simple transformer. Diagrams. 1800 w. Elec Wld—Sept. 7, 1907. No. 86846.

The Design of Transformers as Influenced by the Employment of Alloy-Sheets.

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Dr. Robert Pohl. Abstracted from *Elek. Zeit.* Proves that the use of alloy-sheets for smaller sizes of transformers leads to increased efficiency, reduced cost and weight of active material. 600 w. Elect'n, Lond—Sept. 13, 1907. No. 87208 A.

The De Faria Electrolytic Transformer (Transformateur Electrolytique, système O. de Faria). J. A. Montpellier. Description of an apparatus for transforming alternating into direct current on a small scale, especially adapted to laboratory use. Ill. 300 w. L'Elec—March 2, 1907. No. 82980 D.

The de Faria Electrolytic Transformer. O. de Faria. An illustrated description of design, construction, and operation, with results of tests. 3200 w. Bull Soc d'Encour—July, 1907. No. 86918 G.

Wiring and Connections for Constant Potential Transformers. George A. Burnham. Diagrams and description of the core-type and shell-type transformers and the electrical connections. 2800 w. Elec Wld—Oct. 5, 1907. No. 87488.

Unbalanced Loads in Two-Phase to Three-Phase Transformation. Bernh. F. Jakobsen. Records a general solution of a problem in phase transformation. 1000 w. Elec Wld—Oct. 12, 1907. No. 87709.

## Wire.

Hard-Drawn Copper Wire. Thomas Bolton. Gives an account of results obtained in a number of tests recently carried out, to acquire data which might assist toward the framing of standard specifications for all sizes of wire. 1800 w. Elec Rev, Lond—Jan. 25, 1907. No. 82141 A.

Specifications for Line Wire. F. F. Fowle. Views based on experience of a telephone engineer. General discussion also. 6800 w. Pro Ry Sig Assn—1906. No. 82479 N.

## Wireless Energy.

The Operation of Mechanical Devices at a Distance by Means of the Wireless Transmission of Energy. Dr. Alfred Gradenwitz. Gives a brief review of the principles of wireless telegraphy and their application for the purpose of producing mechanical effects. Ills. 1500 w. Sci Am Sup—June 8, 1907. No. 84823.

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### Accidents.

Accidents with Electrical Machinery. Information from the last annual report of G. S. Ram, Inspector of Factories in England. 4000 w. Mech Engr—July 27, 1907. No. 86159 A.

### Agriculture.

Electricity in Agriculture (L'Elettricità nell' Agricoltura). Emilio Guarini. Discusses the various ways in which electricity could be used to advantage in agri-



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## Argentina

culture. 3300 w. Serial. 1st part. Electricité—April 19, 1907. No. 84121 D.

## Argentina.

Electrical Development in Argentina. Lewis R. Freeman. Facts elicited from prominent residents of Mendoza during a recent visit in regard to power development possibilities. Ills. 1800 w. Elec Wld—Sept. 14, 1907. No. 87034.

## Coal-Tipping.

A Novel German Electric Coal-Tipping Device. Frank C. Perkins. Illustrations, with brief description. 400 w. Sci Am Sup—Feb. 2, 1907. No. 82087.

## Depreciation.

✓ Depreciation. Robert Hammond. Introduces this question aiming to arouse a discussion and reach a conclusion as to the proper provision which should be made in electrical undertakings. 5000 w. Inst of Elec Engrs—April 25, 1907. No. 84248 N.

Depreciation. Editorial review of recent papers on this subject. Especially the papers of Robert Hammond, P. D. Leake, and Lawrence R. Dicksee. 2800 w. Engng—May 3, 1907. No. 84343 A.

## Domestic Appliances.

Electricity in the Home. H. W. Hillman. The writer lives in a thoroughly equipped electric house, and describes the devices and economy possible, and the advantages of domestic electric service. 2800 w. Cassier's Mag—Nov., 1906. No. 80209 B.

Electrical Exhibits and Demonstrations in Wanamaker's New York Store. Illustrated description of an interesting exhibit to demonstrate the operation and use of electrical devices for use in the home. 1500 w. Elec Wld—Nov. 3, 1906. No. 80257.

## Dumb-Waiters.

Electric Dumb-Waiter Machines and Systems. E. L. Dunn. Describes briefly the principal features of modern dumb-waiters, referring to the system installed in the new Plaza Hotel, New York City. Ills. 1600 w. Elec Wld—Aug. 3, 1907. No. 86149.

## Education.

On the Concentric Method of Teaching Electrical Engineering. V. Karapetoff. Outlines the concentric method of education, discussing also the present method. 5000 w. Pro Am Inst of Elec Engrs—July, 1907. No. 86536 D.

The Attitude of the Technical School Toward the Profession of Electrical Engineering. Henry H. Norris. Examines

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the methods of instruction in technical schools in order to ascertain how the requirements are being met, and to note the progress made. 3500 w. Pro Am Inst of Elec Engrs—July, 1907. No. 86534 D.

## Electrical Phenomena.

A Presentation of Two Theories of Electrical Phenomena (Deux Théories des Phénomènes Electriques en Présence). P. Harckman. An explanation of the conflicting electronic and ionic theories of electrical phenomena. Ills. 6000 w. Soc Belge d'Elec'ns—Sept., 1907. No. 87600 E.

## Electric Applications.

Applications of Electricity in the Mess Hall at West Point, N. Y. Illustrates and describes many and varied uses of electricity. 1500 w. Elec Wld—Feb. 23, 1907. No. 82540.

The Field of Electric Alternating-Current Service. H. S. Knowlton. Discusses the special field of usefulness of alternating-current service, with particular reference to the use of the single-phase electric motor. 1800 w. Cassier's Mag—Feb., 1907. No. 82287 B.

The American Co-operative Electrical Development Association. R. Borlase Matthews. An explanation of the object and work of this association for the promotion of the use of electricity for light, heat and power. 3000 w. Elec Rev, Lond—Feb. 8, 1907. No. 82456 A.

## Electric Heating.

Electric Heating and Its Application to the Fusion and Firing of Refractory Materials. R. S. Hutton. Gives an account of some advances being made in the application of electric heating, such as laboratory and experimental uses and industrial processes. 3000 w. Elec Rev, N Y—Feb. 23, 1907. No. 82558.

Electric Heating and Its Application to the Fusion and Firing of Refractory Materials. R. S. Hutton. Abstract of a paper read before the English Ceramic Soc. Divides the paper into laboratory applications and industrial processes. Describes different types of furnaces for laboratory use, and gives details of the manufacture of carborundum, and other refractory materials. 2000 w. Elect'n, Lond—Jan. 25, 1907. No. 82149 A.

## "Energy Car."

"The Energy Car" ("L'Energy-Car"). H. Tudor and M. Braun. A truck fitted with gas engine, generator and battery of accumulators which is in reality a movable central station for small supplies of cur-

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## Exposition

rent. Ills. 3800 w. Soc Belge des Elecns  
—March, 1907. No. 82975 F.

## Exposition.

Electric Power Exhibits at Milan Exposition (Die Elektrotechnik auf der internationalen Ausstellung in Mailand). Alfred Grünhut. Description of motors and controllers for traction and stationary purposes. Ills. Serial. 2 parts. 7700 w. Elektrotech und Maschinenbau—Jan. 20

## Factories.

Two Electrical Factories at Birmingham, England. Illustrated description of a factory for the manufacture of electric cooking and heating apparatus; and a factory for making conduits for electric wiring. 3000 w. Elec Rev, Lond—Nov. 9, 1906. No. 80481 A.

New Works of the Canadian Westinghouse-Co. at Hamilton, Ont. Description of a new plant intended for the manufacture of electrical products. Ills. 3500 w. Eng Rec—Dec. 15, 1906. No. 80995.

## Granary Equipment.

The Electrical Equipment of a Buenos Ayres Granary. Illustrated description of an electrical installation of somewhat unusual interest. 1000 w. Elec Rev, Lond—April 12, 1907. No. 83871 A.

## Insulating Materials.

The Manufacture of Electrical Porcelain. Dean Harvey. Illustrates and describes the process of manufacture. 1200 w. Elec Jour—June, 1907. No. 85133.

## Insulating Varnishes.

Concerning Insulating Varnishes. A. R. Warnes. Gives results of investigations made to find a reliable insulating varnish. 2500 w. Elec Rev, Lond—Sept. 20, 1907. No. 87337 A.

## Lightning Protection.

Standard Lightning Protection for the Consolidated Power Plant Chimneys at United States Navy Yards. N. Monroe Hopkins. Describes the design of lightning protection for chimneys, giving illustrations of experiments which show reasons for the general features, and the approved specifications. 3500 w. Jour Am Soc of Nav Engrs—May, 1907. No. 85764 H.

## Matter.

The Kinetic Theory of Matter (Die Kinetische Theorie der Materie). Dr. G. Jäger. An exposition of the kinetic theory of matter as held by the physicists in the present controversy between physicists and chemists. 4500 w. Zeitschr d Oest Ing u Arch Ver—Aug. 16, 1907. No. 86973 D.

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### Oil.

Drying Transformer Oil. R. B. Treat. Considers tests for determining moisture in oil and methods of removing it without harm to the oil. 1000 w. Elec Wld—March 2, 1907. No. 82774.

### Peru.

Electricity in Peru. Emilio Guarini. An illustrated article giving an account of the electrical development and the favorable conditions for the application of electricity. 2000 w. Elec Wld—Sept. 14, 1907. No. 87035.

### Phono-Cinematograph.

The Phono-Cinematograph (La Phono-Cinématographie). A. Bidault des Chaumes. Illustrated detailed description of apparatus for reproducing at the same time sounds by a phonograph arrangement and scenes by a cinematograph. 5000 w. Génie Civil—May 11, 1907. No. 84908 D.

### Plant Growth.

Effect of Electricity Upon Plants. J. H. Priestly. Abstract of a paper read before the British Naturalists' Soc. Gives results of experiments with the overhead discharge system of electrification; also with earth currents. 3000 w. Elect'n, Lond—Sept. 6, 1907. No. 87063 A.

### Possibilities.

The Possibilities of Electrical Development. R. Borlase Matthews. Read before the Birmingham & Dist. Elec. Club. A discussion of the methods that should be employed in England. 6000 w. Elec Engr, Lond—Oct. 11, 1907. No. 87828 A.

### Print Works.

Electric Motor Driving for Print Works (Der elektrische Antrieb in Zeugdruckereien). Max Arbeiter. Description of results obtained by use of motors in cotton print works. Illus. 2000 w. Elektrotechnische Zeitschrift—March 21, 1907. No. 83649 B.

### Radioactivity.

Radioactivity and Atmospheric Electricity. Prof. H. Geitel. Trans. from Umschau. A report of experimental investigations which appear to support the theory that the phenomena of atmospheric electricity can be derived from the observed radioactivity of the soil and ionization of the air. Ills. 2500 w. Sci Am Sup—April 27, 1907. No. 83914.

### Reviews.

The Influence of Electrical Engineering (Ueber den Einfluss der Elektrotechnik). Prof. Karl Hochenegg. Inaugural address at the Vienna Technical College,

## ELECTRICAL ENGINEERING

### Reviews

giving a general review. 4000 w. Zeitschr d Oest Ing u Arch Ver—Nov. 2, 1906. No. 80623 D.

The Development of Electrical Engineering Since 1890 (Die Entwicklung der Elektrotechnik Seit 1890). Hr. Engelmann. Paper before the Aachen Section of the Verein, giving a general review. 2500 w. Zeitschr d Ver Deutscher Ing—Nov. 10 1906. No. 80619 D.

The Progress of Electrical Science in 1906. E. E. Fournier d'Albe. An interesting review. 2800 w. Elect'n, Lond—Jan. 25, 1907. No. 82147 A.

Electrical Engineering Progress in the United States in 1906. Henry H. Norris. A brief review of the year's work showing the magnitude of the undertakings in progress. 2800 w. Sib Jour of Engng—Jan., 1907. No. 81916 C.

Electrical Engineering in 1906. A review of electrical power supply schemes, electric railways, haulage on canals, omnibuses, lighting, and various uses of electricity. 6000 w. Engr, Lond—Jan 4, 1907. No. 81656 A.

What Hath Been Wrought. William Hand Browne, Jr. A review of a quarter of a century's progress in the application of electricity, with portraits of men con-

### MISCELLANY

nected with the work. 7000 w. Elec Rev, N Y—March 9, 1907. No. 82875.

The Coming of Age of Electrical Engineering. B. A. Behrend. A review of the past development, with some suggestions as to the future outlook. Ills. 2000 w. Cassier's Mag—May, 1907. No. 84051 B.

### Selenium.

Use of Selenium in Photometric Measurements (Die Anwendung des Selens zu photometrischen Messungen). Paul von Schrott. Review of what has been accomplished in the study of the properties of selenium. 2000 w. Elektrotechnische Zeitschrift—March 28, 1907. No. 83651 B.

### Standardization.

Standardization Rules of the American Institute of Electrical Engineers. Gives rules approved and accepted June, 1907. 12000 w. Pro Am Inst of Elec Engrs—July, 1907. No. 86535 D.

### Waves.

Applications of Hertzian Waves (Aplicaciones de las Ondas Hertzianas). G. J. de G. Garcia. The first instalment deals principally with the methods of producing electric waves and their naval applications. Ills. 8000 w. Revista Tech Ind—June, 1907. No. 85695 D.

### Waves

## INDUSTRIAL ECONOMY

### Accounting

#### Accounting.

Cost Accounts. James Marwick. Considers some of the points which should be covered in a cost system and related matters. 1800 w. Eng Rec—Nov. 17, 1906. No. 80508.

Manufacturing Accounting and Cost keeping. John R. MacNeille. The first of a series of articles tracing through the various stages of production, the methods of accounting and the figuring of the cost of production. 5000 w. Business Wld—Nov. 15, 1906. Serial. 1st part. No. 80513.

Cost Accounting in the Brass Foundry. D. C. Eggleston. Outlines a system which has been gradually developed to meet the requirements of a large manufacturing works. 1200 w. Ir Age—Nov. 15, 1906. No. 80387.

A System of Factory Cost Accounting. D. C. Eggleston. Outlines systems used by manufacturing companies. 1800 w. Jour of Accountancy—Dec., 1906. No. 81900 C.

Brass Foundry Cost Accounting. D. Carl Eggleston. Outlines a system used. 1000 w. Foundry—March, 1907. No. 83182.

Metallurgical Accounts. Philip Henry Argall. Discusses the accountancy necessary for a smelter, its difficulties, and gives forms and statements proposed for use. 2500 w. Min & Sci Pr—Nov. 10, 1906. No. 80398.

Smelter Administration. Herbert Haas. Describes a systematic method of keeping accounts at metallurgical works. 3300 w. Eng & Min Jour—Dec. 22, 1906. No. 81213.

A System of Coal-Mine Accounting. F. A. Hill. Explains a system evolved by the writer which has proved satisfactory in use. 1300 w. Eng & Min Jour—March 30, 1907. No. 83357.

See also Cost Keeping, under INDUSTRIAL ECONOMY.

#### Agreements.

Working Agreements Between Manufacturers. J. F. Cairns. Reviews briefly some of the more important aspects of

### Apprenticeship

the subject of working agreements between firms actually independent but co-operating for mutual benefit. 2000 w. Cassier's Mag—Aug., 1907. No. 86010 B.

#### America.

Industrial America. J. E. Livermore. Comments by a British workman on American machine-shop conditions. Ills. 2500 w. Cassier's Mag—July, 1907. Serial. 1st part. No. 85713 B.

#### American Railways.

The Crisis in the Railway Affairs of the United States (La Crise des Chemins de Fer aux Etats-Unis). G. M. Boissevain. A discussion of the financial condition of the railways of the United States, outlining the causes of the recent drop in the value of securities and the prospects of the future. Tables. 6000 w. Rev Inter Econ—June, 1907. No. 85606 H.

#### Apprenticeship.

The Apprenticeship System in America. Luther D. Burlingame. Discusses its relation to trade schools and the influence of each on American exports. 3000 w. Cassier's Mag—Nov., 1906. No. 80213 B.

A Plan to Provide for a Supply of Skilled Workmen. Magnus W. Alexander. Outlines the training given by the General Electric Co., at the Lynn Works, and gives suggestions to manufacturers for providing a constant supply of skilled workmen. 7500 w. Pro Am Soc of Mech Engrs (Sup)—Nov., 1906. No. 80549.

Modern Adaptations of the Apprenticeship System. O. M. Becker. A review of the difficulties in securing a sufficient number of trained mechanics, under modern shop methods, and of the systems adopted by a number of successful American employers for the training and education of new hands. 3000 w. Engineering Magazine—Dec., 1906. No. 80693 B.

The Weak Point in Our Systems of Industrial Education. H. F. J. Porter. Discussion of the A. S. M. E. paper, "A Plan to Provide for a Supply of Skilled Workmen," by M. A. Alexander. 2200 w. Am Mach. Vol 30. No. 6. No. 82170.

A Plan to Provide a Supply of Skilled

## INDUSTRIAL ECONOMY

### Apprenticeship

Workmen. Discussion of paper by M. W. Alexander. 4000 w. Pro Am Soc of Mech Engrs—Feb., 1907. No. 82502 F.

A Plan to Provide a Supply of Skilled Workmen. M. W. Alexander's paper on this subject is discussed. 5000 w. Pro Am Soc of Mech Engrs—March, 1907. No. 83169 C.

Apprenticeship. James Parsons. An account of the objects and work of an Apprenticeship and Skilled Employment Committee, with comments. 11000 w. Jour Soc of Arts—Feb. 1, 1907. No. 82230 A.

Real Apprenticeship. G. M. Basford. Considers briefly some of the fundamental principles likely to lead to success. 1000 w. Am Engr & R R Jour—June, 1907. No. 84789 C.

A Rational Apprentice System. An illustrated detailed description of the apprentice system recently introduced on the New York Central lines and being extended throughout the system. 7500 w. Am Engr & R R Jour—June, 1907. No. 84783 C.

A Rational Apprentice System. Gives extract from Mr. Deems' address before the Master Mechanics' Assn., and the paper of C. W. Cross and W. B. Russell. Also discussion. 12500 w. Am Engr & R R Jour—July, 1907. No. 85408 C.

Industrial Education. W. B. Russell. Gives details of the apprentice system of the New York Central lines. 4500 w. Pro Am Soc of Mech Engrs—Oct., 1907. No. 87772.

Technical Education of Apprentices in Connection with Actual Practice. S. M. Dolan. Deals particularly with the supplementary education of railroad apprentices, showing what has been done at the Missouri Pacific Ry. shops at Sedalia, Mo. Ills. 2700 w. Pro St Louis Ry Club—Jan. 11, 1907. No. 82266.

The Improvement of Opportunity for the Young Workman. George Frederick Stratton. Outlines the apprenticeship system devised by the General Electric Company, and shows the advantages of study with correspondence schools. 2000 w. Engineering Magazine—Aug., 1907. No. 85920 B.

The Training of Apprentices in Foundry Work. Brief account of a successful course of education introduced by the Ingersoll-Rand Co., at their Phillipsburg, N. J., shops. 2000 w. Foundry—Aug., 1907. No. 86014.

A Model Apprenticeship System. Magnus W. Alexander. On the General Electric Company's system as established at

### Canadian Branches

Lynn, Mass. 2200 w. Ir Age—Sept. 19, 1907. No. 87103.

See also Education, under INDUSTRIAL ECONOMY.

### Arbitration.

Arbitration: Compulsory and Voluntary. Discusses the failure of compulsory arbitration in Australia. 2500 w. Min & Sci Pr—Sept. 7, 1907. No. 86892.

### Argentine Republic.

The Argentine Republic and Its Economic Development (La République Argentine et son Développement Économique). Maurice Lewandowski. Describes the great commercial importance of Argentina, its resources, railways, rivers, etc., outlining the enormous progress made in recent years. 16000 w. Rev Inter Econ—June, 1907. No. 85607 H.

### Australia.

Industry and Politics of Western Australia. Ralph Stokes. Discusses the mining industry and the miner, and conditions affecting this industry. Ills. 2300 w. Min Wld—Dec. 8, 1906. No. 80898.

### Bills of Lading.

The Uniform Bill of Lading. Discusses the bill proposed by the Interstate Commerce Commission. 2000 w. Ir Age—July 18, 1907. No. 85730.

### Board of Trade.

British Board of Trade. A. R. Bell. An explanation of the powers and functions of this important organization. 2500 w. Ry & Loc Engng—June, 1907. No. 84773 C.

### Brazil.

The Brazil of the Present (Le Brésil Contemporain). E. Levasseur. A review of the economical progress of Brazil during the last fifteen years, describing its resources, mineral wealth, commerce, railways, etc. Tables. 10500 w. Rev Inter Econ—June, 1907. No. 85605 H.

### British Industry.

The Trust Movement in British Industry. Reviews a recent book on this subject by Henry W. Macrosty, discussing the reasons why trusts are formed and related matters. 4000 w. Ir Age—July 4, 1907. No. 85442.

### Canada.

Industrial Development of Canada. A review of recent rapid development and the conditions affecting industries. 4700 w. Am Mach—Vol. 29. No. 44. No. 80171.

### Canadian Branches.

United States Manufacturers in Can-

## INDUSTRIAL ECONOMY

### Cement

ada. Edward Porritt. Condensed from Boston *Transcript*. On the causes that have led to the establishment of branches of American industrial concerns in Canada. 2800 w. *Ir Age*—Sept. 26, 1907. No. 87229.

### Cement.

The Cement Industry of the World. Robert W. Lesley. A brief résumé of the situation at home and abroad, showing the United States far in the lead. 10000 w. *Cement Age*—Jan., 1907. No. 81796.

### Channel Tunnel.

The Channel Tunnel. Walter H. James. Discusses both the military and commercial sides of the question, presenting arguments unfavorable to the construction. 4500 w. *Contemporary Rev*—Feb., 1907. No. 82488 D.

The Revived Channel Tunnel Project. Gives 6 short articles by prominent men of England protesting against the connection of England and France by a tunnel under the Channel. Also a reprint of a protest published in 1883. 65000 w. *Nineteenth Cent*—Feb., 1907. No. 82487 D.

The Channel Tunnel. Translated from *L'Illustration*. Reviews the projects at various times for constructing a tunnel under the English Channel. 2000 w. *Sci Am Sup*—March 9, 1907. No. 82811.

### Chemistry.

The Industrial Outlook for Physical Chemistry. Alfred Sang. Showing the important bearing of chemical research as applied to the industries. 6000 w. *Pro Engrs' Soc of W Penn*—Feb., 1907. No. 83036 D.

The Methods and the Importance of the System of Organic Chemistry (*Die Methoden und die Bedeutung der organisch-chemischen Technik*). Otto N. Witt. Discussion of the commercial importance of organic chemistry. 5100 w. *Zeitschr d Oesterr Ing u Arch Vereines*—March 15, 1907. No. 83654 D.

The Interrelation of Chemistry and Engineering in Technology (*Das Zusammenwirken von Chemie und Ingenieurwesen in der Technik*). George Lunge. Serial. 3 parts. 8200 w. *Zeitschr d Oesterr Ing u Arch Vereines*—Feb. 15, Feb. 22, and March 1, 1907. No. 83617 each D.

### Chile.

The Mining Industry in Chile. Henry C. Ede. Information in regard to Chile as a copper and silver producer. 2500 w. *Min Jour*—March 23, 1907. No. 83420 A.

### Chinese Trade.

Mechanical Agencies in the Develop-

### Copper Industry

ment of Chinese Export Trade. Barrett Smith. Illustrates and describes the application of hydraulic press packing in China for shipment of raw materials to America and European markets, which makes possible the large export trade at present freight rates. 3800 w. *Engineering Magazine*—Feb., 1907. No. 81898 B.

### Coal Lands Tax.

The Proposed Tax on Anthracite Coal Lands. Editorial discussion of this tax, showing it to be unjust. 1500 w. *Mines & Min*—Sept., 1907. No. 86769 C.

### Coal Reserves.

How Long Will the Coal Reserves of the United States Last? Marius R. Campbell. Discusses the formation of coal, the production, distribution, estimated amount in the United States, etc. Also a short article on "Efforts to Obtain Greater Energy from Coal." 5000 w. *Nat Geog Mag*—Feb., 1907. No. 82661 C.

### Commerce of U. S.

Commerce of the United States by Principal Ports and Sections, 1907. Some recent statistics and comparisons showing the trend of the import and export trade. 1800 w. *Sci Am Sup*—Aug. 31, 1907. No. 86680.

### Competition.

"Made in Germany": A Study of Competition. Louis Bell. Discusses the methods of American business as related to foreign competition, stating facts and suggesting remedies. 2500 w. *Engineering Magazine*—June, 1907. No. 84191 B.

American Competition (*La Concurrence Américaine*). M. Vialate. The first instalment deals with industrial organization, conditions of labor, industrial legislation, labor unions, etc. Serial. 1st part. 16000 w. *Bull Soc d'Encour*—March, 1907. No. 84108 G.

### Contract Work.

The Responsibility of the Engineering Profession for the Conduct of Public Contracts. Major Cassius E. Gillette. Considers the processes of letting public contracts, and the duty of all honest engineers to follow such methods as will make fraud exceedingly difficult. 5000 w. *Eng News*—May 30, 1907. No. 84695.

### Copper Industry.

The Copper Situation in the United States. James Douglas. Gives a review of the sources of supply and demand and a study of the present position and economic outlook. 6000 w. *Engineering Magazine*—Oct., 1907. No. 87275 B.

## INDUSTRIAL ECONOMY

### Cost-Keeping

#### Cost-Keeping.

**Manufacturing Cost.** R. H. Probert. Abstract of a paper read before the Ohio Soc. of Mech., Elec., and Steam Engrs. Briefly considers the chief elements entering into the cost of manufacture. 2000 w. *Ir Trd Rev*—Jan. 3, 1907. No. 81404.

**Cost Determining.** W. B. Koller. Describes a system of interest to the large as well as the small manufacturer. 1200 w. *Ir Age*—Oct. 10, 1907. No. 87535.

**Higher Costings.** Arthur Winder. A criticism of systems of determining costs and an explanation of a better method. 4000 w. *Cassier's Mag*—Oct., 1907. No. 87389 B.

**Cost-Keeping in the U. S. Reclamation Service.** A statement concerning the character of the information which it is desired to obtain, with extracts from the Manual of Field Accounting showing how the methods can be adapted to obtain the results. 3800 w. *Eng News*—April 25, 1907. No. 83905.

**Jobbing Foundry Cost System.** H. D. Miles. Explains a simple and comprehensive system recommended by the Jobbing Founders' Assn. 1400 w. *Foundry*—April, 1907. No. 83591.

**Cost Accounts.** H. F. J. Porter. Discusses the function of a cost accounting system and matters relating to such systems. 1800 w. *Am Mach*—Vol. 30, No. 26. No. 85297.

**Machine-Shop Cost Estimating.** George Bilham. Gives an analysis of the various factors, showing that there is too much addition for slide-rule computation. 1800 w. *Am Mach*—Vol. 30, No. 22. No. 84683.

**Cost Keeping as an Aid in Managing Men.** Halbert P. Gillette. Outlines the old method of management, and discusses cost keeping as a means of determining the efficiency of labor. 4000 w. *Engng-Con*—July 17, 1907. No. 85771.

**Cost Keeping in Large Plants (Aus der Praxis des Rechnungswesens in Grossbetrieben).** C. Redtmann. Discusses the theory of cost keeping in machine shops. Ills. 1800 w. *Serial*. 1st part. *Zeitschr f Werkzeugmaschinen u Werkzeuge*—June 25, 1907. No. 85655 D.

**An Economical and Practical Cost System.** B. A. Franklin. Describes a simple and effective shop cost system for machine builders, the forms used, and its installation in a factory. 3800 w. *Am Mach*—Vol. 30, No. 32. No. 86197.

**Machine Shop Costs.** William Cunningham. Brief description of methods followed by the Westinghouse Electric

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and Manufacturing Company, with general remarks and discussion. 5000 w. *Pro Engrs' Soc of W Penn*—Dec., 1906. No. 81060 D.

**The Proper Treatment of Machine Costs.—A Criticism and a Theory.** Andrew A. Murdoch. Comments on Mr. Whitmore's articles on Machine Shop Costs, especially emphasizing the importance of reorganizing machine labor as a basic element of cost. 3300 w. *Jour of Accountancy*—Dec., 1906. No. 81901 C.

**A System for Obtaining Foundry Costs.** C. J. Redding. A detailed description with facsimiles of all the forms necessary to put it into effect. The author points out especially the great commercial risk of rough "estimates" and incomplete knowledge of real costs. 4000 w. *Engineering Magazine*—Jan., 1907. No. 81192 B.

**A System of Management in a Foundry.** A brief account of the experience of a steel foundry with the task and bonus system. 1200 w. *Ir Trd Rev*—June 13, 1907. No. 85031.

**Cost Reduction Through Cost Comparison.** C. E. Knoeppel. The present paper refers only to burden costs. Explains a system devised by the writer, illustrating by an example. 2500 w. *Engineering Magazine*—March, 1907. No. 82639 B.

**Cost Reduction Through Cost Comparison.** C. E. Knoeppel. This second article of a series considers the treatment of machine, part, group, and operation costs. 1700 w. *Engineering Magazine*—April, 1907. No. 83315 B.

**Cost Reduction Through Cost Comparison.** C. E. Knoeppel. Third and concluding paper of a series. The present number considers the organization and functions of a cost-reducing department. 4000 w. *Engineering Magazine*—May, 1907. No. 83940 B.

**Labor: Time Systems and Pay Roll.** F. E. Webner. Fifth of a series of articles on cost keeping. Deals principally with time recording. 1700 w. *Ir Trd Rev*—Jan. 3, 1907. No. 81403.

**Labor: Individual Shop Orders and Groups of Orders.** F. E. Webner. Sixth of a series of articles on cost keeping. Discusses the utilization of scrap or waste stock, and matters relating to shop orders. 1200 w. *Ir Trd Rev*—Feb. 7, 1907. No. 82182.

**Labor: Premium System.** F. E. Webner. The seventh of a series of articles on cost-keeping. 3300 w. *Ir Trd Rev*—March 7, 1907. No. 82787.

**Expense: Manufacturing and Commercial.** F. E. Webner. The eighth of a

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### Cost-Keeping

series of articles on cost-keeping. 2200 w. *Ir Trd Rev*—April 4, 1907. No. 83475.

Expense: Man-Hour Distribution. F. E. Webner. The tenth of a series of articles on cost keeping. 1500 w. *Ir Trd Rev*—June 13, 1907. No. 85030.

What Constitutes Cost of Production. F. E. Webner. The eleventh of a series of articles on cost-keeping. Also supplement. 2000 w. *Ir Trd Rev*—Aug. 1, 1907. No. 86034.

A Perfect Cost System. F. E. Webner. The twelfth and final article of a series on cost keeping. 2000 w. *Ir Trd Rev*—Sept. 5, 1907. No. 86774.

See also Accounting, under INDUSTRIAL ECONOMY.

### Delivery.

How to Keep Promises of Delivery. J. Stratton. Gives details of a system adopted and found successful for insuring the fulfilment of promises of quick delivery of shop work. 1500 w. *Elec Rev, Lond*—June 14, 1907. No. 85238 A.

### Depreciation.

Depreciation and Reserves for Antiquation and Obsolescence from an Engineering Standpoint. C. H. Yeaman. Abstract of a paper before the Incor. Munic. Elec. Assn. Also discussion. 4500 w. *Elect'n, Lond*—July 5, 1907. No. 85584 A.

✓ Adequate Depreciation of Capital Expenditure by Municipal Electricity Undertakings. J. Horace Bowden and Fred Tait. A discussion of this subject, with suggestions. 3000 w. *Elec Rev, Lond*—June 21, 1907. Serial. 1st part. No. 85387 A.

✓ Depreciation. P. D. Leake. A plea for the study and use of better methods of measuring and providing for depreciation of industrial plants. 4500 w. *Mech Engr*—July 27, 1907. Serial. 1st part. No. 86157 A.

See same title, under ELECTRICAL ENGINEERING, MISCELLANY.

### Dock Business.

Dock Capital, Expenditure, Receipts, and Management. Lee Galloway. Detailed discussion of the business of a dock system. 5400 w. *Jour of Acc*—Aug., 1907. No. 86521 C.

### Education.

Mining Education. Prof. J. A. Wilkinson. Discusses the training required, the preliminary education, college training, and post-graduate work. 6000 w. *Jour Chem, Met & Min Soc of S Africa*—Aug., 1906. No. 80391 E.

### Education

The Education of Mining and Metallurgical Engineers. John Bonsall Porter. Outlines a course of study desirable and gives a report of the work in mining and metallurgy at McGill University. Discussion. Ills. 10000 w. *Jour Can Min Inst*—1906. No. 83812 N.

The Teaching of Metallurgy in College Laboratories, with a Description of the Metallurgical Laboratories of McGill University. A. Stansfield. A synopsis of the teaching at McGill, with a brief discussion of general principles. Ills. 4200 w. *Jour Can Min Inst*—1906. No. 83813 N.

Education of Mining Engineers. T. A. Rickard. Address delivered at the opening of the new Mining building of the University of California. 2500 w. *Min & Sci Pr*—Aug. 31, 1907. No. 86795.

Opening of the New Mining Building of the University of California. A report of the opening of the Hearst Memorial Building, with illustration. 2700 w. *Min & Sci Pr*—Aug. 31, 1907. No. 86793.

The Training of Economic Geologists and the Teaching of Economic Geology. John A. Reid. Gives the writer's views of the preparation required and the methods of teaching. 3500 w. *Ec Geol*—June, 1907. No. 86488 D.

The Marine Engineer, English and Foreign: His Training and Education. H. Bithel-Jones. Examines conditions existing in Germany, Denmark, Norway and Sweden, comparing with the conditions of British engineers. 5000 w. *Marine Rev*—March 7, 1907. No. 82814.

The United States Naval Academy as an Engineering School. Walter F. Worthington, Commander, U. S. N. An illustrated article giving information in regard to the training for naval officers at Annapolis in engineering, and the writer's conclusions concerning its value. 2500 w. *Engineering Magazine*—March, 1907. No. 82633 B.

Technical Foundry Education. H. E. Field. Read before the New England Found. Assn. Discusses some defects of technical schools and colleges, and the preparation and discipline needed, especially considering foundry education. 4000 w. *Ir Trd Rev*—Jan. 3, 1907. No. 81405.

Technical Foundry Education. H. E. Field. Read before the N. Eng. Found. Assn. Criticizes the methods taught and suggests a new course which will specialize in foundry practice. 3500 w. *Foundry*—March, 1907. No. 83176.

The Foundry Plant of the Siegen School for Iron and Steel Technology



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## Education

(Die Giesserei-Anlagen der Königlichen Fachschule für die Eisen- und Stahlindustrie des Sieger Landes zu Siegen). An illustrated description of the method and equipment for teaching foundry work at this German trade school. 2000 w. Stahl u Eisen—July 3, 1907. No. 86226 D.

The Training in Foundry Work at Pratt Institute. William C. Stimson. An illustrated description of the course of instruction given. 7000 w. Foundry—Aug., 1907. No. 86022.

The Technical Teaching of Electricity in France and in Foreign Countries (L'Enseignement Technique de l'Electricité en France et à l'Etranger). G. de Lamarcodie. Discusses equipment and teaching methods in a large number of European technical schools with especial reference to the more important French institutions. Ills. 8500 w. Revue Gen des Sci—May 30, 1907. No. 84905 D.

The Electrotechnic Institute of the Technical University in Karlsruhe (Baden). Stanley P. Smith. Gives a general idea of the curriculum and of the examinations. Ills. 2500 w. Elect'n, Lond—Oct. 11, 1907. No. 87833 A.

Engineering Education and Engineering Ethics. Charles Day. Read before the Phila. Branch of the Am. Inst. of Elec. Engrs. Discusses the future in engineering practice, and the tendency and necessity for co-operation. 2500 w. Pro Am Inst of Elec Engrs—Dec., 1906. No. 81906 D.

Engineering Education. B. A. Behrend. A discussion of present methods of instruction, calling attention to defects, and considering the influences that seriously affect the results. 5500 w. Elec Wld—Jan. 5, 1907. No. 81501.

Engineering Education. Arthur J. Rowland. Some remarks on the proper scope of engineering education, particularly electrical engineering. 2000 w. Pro Am Inst of Elec Engrs—Jan., 1907. No. 83023 D.

Technical Instruction in the United States (Instruction Industrielle Technique aux Etats-Unis d'Amérique). Dr. H. Schacht. The conclusions formed by Prussians who have investigated the subject. 6000 w. Rev Econ Inter—Feb., 1907. No. 82995 E + F.

The Relation of Engineering Schools to Polytechnic Education. Dugald C. Jackson. Presidential address delivered at the Cleveland meeting of the Society for the Promotion of Engineering Education. 4000 w. Ir Trds Rev—July 11, 1907. No. 85529.

Address to the Engineering Section of

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the British Association at Leicester. Silvanus P. Thompson. Deals with the interaction of science and engineering, education and training of engineers, etc. 9000 w. Engng—Aug. 2, 1907. No. 86365 A.

Shop Work at an Engineering School. W. S. Graffam. Discusses the aim of shop practice in such a school, the needs, etc. 2000 w. Mach, N Y—Aug., 1907. No. 86136 C.

Co-operative Courses in Engineering at the University of Cincinnati. Herman Schneider. Read before the Soc. for the Pro. of Engng. Ed. An account of a course in which students work alternate weeks in the engineering college of the university and at the manufacturing shops of the city. 2000 w. Am Mach—Vol. 30, No. 37. No. 86883.

The Education of Engineers for Operation and Management in the Technical High Schools of Germany (Die Wirtschaftliche Ausbildung der Maschinen-Ingenieure für Betrieb und Verwaltung an den Technischen Hochschulen Deutschlands). Walter Conrad. 3400 w. Serial. 1st part. Zeitschr d Oest Ing u Arch Ver—Sept. 6, 1907. No. 87644 D.

Organization of the Society for the Promotion of Industrial Education. A report of the meeting for organization on Nov. 16, 1906, at Cooper Union, New York City. 2500 w. Am Mach—Vol. 29. No. 47. No. 80553.

A Comparison of University and Industrial Methods and Discipline. Frederick W. Taylor. An address delivered at the dedication of the new Engineering Building of the University of Pennsylvania. Considers the preparation of young men for success in commercial engineering and industrial enterprises. 3500 w. Pro Am Soc of Mech Engrs—Jan., 1907. No. 81388.

Education for Industrial Workers. Arthur D. Dean. A plea for a machine trade school giving a suggested outline. 3500 w. Mach, N Y—Sept., 1907. No. 86749 C.

College and Apprentice Training. John Price Jackson. Discusses the relation of the student engineering courses in the industries to the college technical courses. 6000 w. Pro Am Soc of Mech Engrs—Oct., 1907. No. 87773 C.

The Training of Engineers on the "Sandwich" System. L. D. Coueslant. Explains the working of the apprentice-studentship scheme of the Sunderland Technical College. 2500 w. Engng—Oct. 11, 1907. No. 87837 A.

The Technical Schools of Germany (Les Ecoles Techniques Allemandes). André Pelletan. A review of students,

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### Education

courses and methods, with plans of laboratories, of the technical high schools of Germany, with some reference to technical education in other countries. 9000 w. *Rev de Métallurgie*—Nov., 1906. No. 80635 E+F.

**Commercial Value of Industrial Schools.** Samuel F. Hubbard. Discussion of methods for establishing and managing trade schools that shall be a practical aid in the manufacturing industries. 2500 w. *Am Mach*—Vol. 30. No. 14. No. 83441.

**Technical Training of Electrical Artisans.** C. P. C. Cummins. Read before the Dublin Sec. of the Inst. of Elec. Engrs. Discusses present methods of training and their defects, and outlines a revised system. 6000 w. *Elec Engr, Lond*—April 19, 1907. No. 83990 A.

**A Railroad University.** Altoona and Its Methods. Frederic Blount Warren. An illustrated description of the system employed by the Pennsylvania Railroad for the practical training of technical students. 2500 w. *Engineering Magazine*—May, 1907. No. 83935 B.

**The Technical Student and the Engineering Apprenticeship Course.** H. Cole Estep. A statement of the present attitude of technical students toward the engineering-apprenticeship courses offered by United States manufacturers. 2000 w. *Engineering Magazine*—May, 1907. No. 83934 B.

**Lantern Slides for Shop Instruction.** Charles A. Francis. Illustrated description of a method devised to teach Japanese workmen. Gives a set of slides showing mistakes made by workmen. 700 w. *Am Mach*—Vol. 30, No. 25. No. 85150.

**Commercial Training Workshops.** Charles Prescott Fuller. Gives an outline of a course of training which the writer believes would best fit the youths for the exacting requirements of the future. 2500 w. *Am Mach*—Vol. 30, No. 37. No. 86887.

**The Carnegie Technical Schools, Pittsburgh, Pa.** Day Allen Willey. Information of interest in regard to these schools, with illustrations. 1600 w. *Sci Am*—April 13, 1907. No. 83578.

**Some Recent Additions to the Technical Equipment of the Chemical Engineering Laboratories.** Judson C. Dickerman. Describes machines recently added for work in industrial chemistry, and for technical gas analysis at the University of Wisconsin. Ills. 1000 w. *Wis Engr*—June, 1907. No. 85130 D.

**The Russell Sage Laboratory.** Rensselaer Polytechnic Institute. Describes the mechanical and electrical equipment.

### Eight-Hour Day

1500 w. *Eng News*—Oct. 31, 1907. No. 87986.

**The Engineering School of Cambridge University.** Gives information concerning the University in general, and especially considers the engineering schools. 5000 w. *Engng*—Nov. 2, 1906. Serial. 1st part. No. 80356 A.

**Engineering Laboratories of the University of Pennsylvania.** An illustrated detailed description of these laboratories and their equipment. 9800 w. *Ry & Engng Rev*—March 23, 1907. No. 83250.

**The Engineering Side at Bedford Grammar School.** Editorial on the work being done at this school, which aims to give instruction that will really assist in the boy's progress. Ills. 2000 w. *Engng*—July 12, 1907. No. 85872 A.

**The National Engineering School of Mexico.** Mansfield Merriman. Illustrates and describes the building and gives the history of this engineering college, undoubtedly the oldest institution for engineering instruction on the western continent. 1300 w. *Eng News*—Sept. 19, 1907. No. 87112.

See also same title, under **ELECTRICAL ENGINEERING, MISCELLANY.**

### Eight-Hour Day.

**Report of the Miners' Eight Hour Day Inquiry Committee.** Gives most of the important parts of this lengthy document which contains valuable information in regard to the economic conditions of the working of coal mines. Also editorial. 25000 w. *Ir & Coal Trds Rev*—May 24, 1907. Serial. 1st part. No. 84766 A.

**Miners' Eight-Hour Day.** Editorial discussion of the final opinion of the Committee appointed to inquire into the probable economic effect of a limit of eight-hours to the working-day of coal miners. 3000 w. *Engng*—May 31, 1907. No. 84894 A.

**Probable Effect of an Eight-Hour Shift on Colliery Work.** Gives tables showing the probable distribution of labor, estimated working costs, etc., at the Northumberland and Durham Collieries, should the Eight Hours Bill be placed on the Statute Book. 1500 w. *Ir & Coal Trds Rev*—Aug. 23, 1907. No. 86744 A.

**The Eight-Hour Day in French Government Works.** Editorial, outlining the experiments with the eight-hour day made in the French State establishments, which show that reduction in hours of labor cause a reduction in output and a large increase in cost. 2000 w. *Engng*—May 10, 1907. No. 84636 A.

## INDUSTRIAL ECONOMY

### Electrical Industry

The Reduction of the Working Day to Eight Hours (*La Réduction de la Journée de Travail à Huit Heures*). Maurice Alfassa. An exhaustive consideration of its economic effects in French government works, the first number of the serial dealing with the postal and naval departments. 7000 w. Serial. 1st part. Bull d l Soc d'Encour—July, 1907. No. 86205 F.

### Electrical Industry.

The Electrical Industry at Home and Abroad. Dr. C. V. Drysdale. Address to the Students' Sec. of the Inst. of Elec. Engrs. Discusses the causes of the unsatisfactory state of affairs in England, and the progress in other countries. 7000 w. Elec Engr, Lond—Nov. 30, 1906. No. 80913 A.

### Electric Railways.

The Electric Railway Situation of Today. Henry J. Pierce. Address before the Street Railway Assn. of the State of N. Y., and the Empire State Gas and Electric Assn. 3500 w. Elec Ry Rev—Oct. 5, 1907. No. 87490.

### Employers' Liability.

The Risks of the Trade. James P. Wilson. A discussion of the employer's liability law, especially in its relation to railway employees. General discussion. 10,000 w. Pro Ry Club of Pittsburgh—Jan., 1907. No. 83280 C.

British Workmen's Compensation Acts. Launcelot Packer. A review of British legislation in regard to the compensation of workmen for injuries received in their employment, with full text of the Act of 1906, to take effect July 1, 1907. 29000 w. Bul Bureau of Labor—May, 1907. No. 85264 N.

Workmen's Compensation and Insurance. Jos. J. H. Stansfield. Deals with the effect of the new Employers' Liability Act upon the position of the manufacturer, and shows that, in some ways, the act is obscure. 2800 w. Elect'n, Lond—June 28, 1907. No. 85498 A.

### Engineering Building.

United Engineering Society Building. Description by the historical and publication press committee prepared for the dedication exercises of this building in New York City. Ills. 7000 w. Bul Am Inst of Min Engrs—May, 1907. No. 85268 C.

### Engineering Business.

Starting an Engineering Business. Sydney F. Walker. An examination of present conditions and the essentials to secure success. 1200 w. Prac Engr—May 17, 1907. Serial. 1st part. No. 84607 A.

### Engineering Ethics.

Proposed Code of Ethics. Gives the committee report of the Am. Inst. of Elec. Engrs. presenting a code of general principles of professional conduct for the guidance of the electrical engineer. 2000 w. Pro Am Inst of Elec Engrs—May, 1907. No. 85286 D.

Address by Arthur T. Hadley at the Dedication of the United Engineering Society Building in New York City. On what may be accomplished by engineers—his professional obligations. 2500 w. Bul Am Inst of Min Engrs—May, 1907. No. 85269.

### Engineer's Role.

The Economic and Social Position of the Engineer (*Le Rôle Economique et Social de l'Ingenieur*). Prof. Maurice Bellom. Abstract of an inaugural lecture at the Ecole Nationale Supérieure des Mines, of France. 8000 w. Génie Civil—Nov. 17 and 24, 1906. No. 81133 each D.

### Exhibitions.

Building Trades Exhibition. Describes the principal exhibits at this show at Olympia. 2000 w. Engr, Lond—April 12, 1907. Serial. 1st part. No. 83887 A.

The Tokyo Industrial Exhibition. Charles A. Francis. An illustrated article outlining the purpose of the exhibition, the industries to be represented, and showing what has been done in a few months. 1200 w. Am Mach—Vol. 30, No. 24. No. 85010.

The Exposition of the French Physical Society in 1907 (*L'Exposition de la Société de Physique en 1907*). M. Aliamet. The first instalment deals with the electrical exhibits, accumulators, condensers, lamps, clocks and measuring instruments. Ill. Serial. 1st part. 2500 w. L'Elec'n—April 27, 1907. No. 84107 D.

Types of Machines, Electrical Devices, and Automobiles at the Milan Exposition (*Allgemeiner Maschinenbau, Elektrische Einrichtungen und Automobilwesen auf der Ausstellung in Mailand*). Herr Pflug. The first instalment describes gas engines, ships coaling devices and the tractor of the Freibahn road train. Ills. 6000 w. Serial. 1st part. Glaser's Annalen—April 15, 1907. No. 84137 D.

The Jamestown Exposition. C. A. Graves. An illustrated description of the exhibits relating particularly to mineral resources and mining. 4200 w. Mines & Min—Sept., 1907. No. 86770 C.

### Filing System.

Filing System for Technical Information. Oscar E. Perrigo. Illustrated description of a cabinet provided with filing

# INDUSTRIAL ECONOMY

## Financial Outlook

drawers for clippings, storage space for periodicals and a card-index system. 2000 w. Am Mach—Vol. 30, No. 19. No. 84300.

## Financial Outlook.

Business and Finance in 1907; Retrospect and Prospect. Editorial discussion of the present condition in the security market, and the causes that can be looked for to change it. 2200 w. Eng News—June 27, 1907. No. 85302.

## Fire Losses.

Fire losses in the United States. Showing the enormous loss by fire, and discussing some of the causes. 3800 w. Engr, Lond—Dec. 28, 1906. No. 81547 A.

## Germany.

The German Engineering Industry in 1906. A review of this past year, which on the whole, was the best since 1900. 1500 w. Engr, Lond—March 22, 1907. No. 83425 A.

## Glasgow.

Industrial Developments in Glasgow. An account of the extensive industrial migration to the outskirts of the city. Ills. 2200 w. Engng—May 3, 1907. No. 84341 A.

## Gold Production.

Prosperity; Its Relation to the Increasing Production of Gold. Alex. Del Mar. An examination of the circumstances which denote prosperity or adversity and the effect of money circulation. 5000 w. Engineering Magazine—Oct., 1907. No. 87276 B.

The Increased Production of Gold and Its Relation to the Standard of Value. Alexander E. Outerbridge, Jr. A discussion of the effect of the increased production of gold. Thinks the increase has failed to keep pace with the expansion of trade and increase in value of other products, and that there is no reason to fear its decline. 3000 w. Cassier's Mag—March, 1907. No. 83027 B.

## Government Control.

President Roosevelt Outlines His Railway Policy. Extracts from a speech delivered at Indianapolis outlining the national policy in reference to railways. Also editorial. 3000 w. Ry Age—June 7, 1907. No. 84830.

The Canadian Railway Commission. J. G. G. Kerry. An account of the work intrusted to this commission in the regulation of railways. 5000 w. Engineering Magazine—Aug., 1907. No. 85912 B.

The Public Utilities Law of New York. Editorial discussion of this law

## Industrial Betterment

for the control of corporations which takes effect July 1st, 1907. 1700 w. Eng News—June 13, 1907. No. 85028.

The Public Utilities Bill. Full copy of the bill recently passed by the New York legislature, providing for regulation of railroads and public service companies. Also editorial. 2000 w. R R Gaz—May 31, 1907. No. 84670.

✓ Control by State Commissions. Alexander C. Humphreys. From an address at Madison Sq. Garden, N. Y., Oct. 1. Discusses the attempts to reform public service corporations. 2500 w. R R Gaz—Oct. 4, 1907. No. 87922.

## Government Ownership.

See same title, under RAILWAY ENGINEERING, MISCELLANY.

## Immigration.

The Italian on the Land: A Study in Immigration. Emily Fogg Meade. An account of the Italian population of Hamonton, N. J., showing how well they are adapted for agricultural pursuits, and giving much information in regard to their progress, industry, etc. 27000 w. Bul Bureau of Labor—May, 1907. No. 85262 N.

## Indexing.

An Inexpensive Indexing System. William E. Reed. Describes a system used by the writer. 1500 w. Am Mach—Vol. 30, No. 29. No. 85774.

## Industrial Betterment.

How One Corporation Helped Its Employees. Lawrence Lewis. An illustrated account of social betterment work of the Colorado Fuel and Iron Company. 4000 w. Eng & Min Jour—June 29, 1907. No. 85332.

Industry and Social Politics (Industrie und Sozialpolitik). R. Krause. A discussion of schemes for industrial betterment now occupying the attention of the German Reichstag. 2500 w. Stahl u Eisen—July 3, 1907. No. 86227 D.

Betterment Work on the Santa Fé. A Complete account of this work, the results and methods used, and the effect on workmen, officials and owners. Ills. 17000 w. Am Engr & R R Jour—Dec., 1906. No. 80932 C.

Shop Betterment Work on the Santa Fé. Charles H. Fry. An explanation of the system of betterment work inaugurated to harmonize the relations between employer and employees, to increase the efficiency, etc. 8000 w. R R Gaz—Nov. 30, 1906. Serial. 1st part. No. 80766.

The Square Deal to the Railroad Employee. H. W. Jacobs. An illustrated

## INDUSTRIAL ECONOMY

### Industrial Legislation

account of the extensive work carried out by the A., T., & S. F. Ry. for the benefit of employees. The construction and maintenance of reading rooms, recreation halls, hospitals; improvement of shops and yards; establishing pensions, etc. 2000 w. Engineering Magazine—June, 1907. No. 84192 B.

See also Workmen's Homes, under CIVIL ENGINEERING, CONSTRUCTION.

### Industrial Legislation.

Industrial Legislation and Its Cost. T. Good. Discusses the effect in Great Britain of the application of legislation to industrial ills. Argues that the benefits cost far more than they would if other means were taken. 3500 w. Cassier's Mag—July, 1907. No. 85710 B.

### Industrial Museums.

A Visit to the German Museum at Munich (Ein Besuch im Deutschen Museum in München). Conrad Matschosz. A description of the exhibits at this large and important technical museum. Ills. 3000 w. Zeitschr d Ver Deutscher Ing—June 22, 1907. No. 85679 D.

A Museum of Traffic and Engineering. Dr. Alfred Gradenwitz. An illustrated description of an industrial museum in Germany, the exhibits principally devoted to railroad engineering. 2000 w. Engineering Magazine—Aug., 1907. No. 85913 B.

### Inventions.

Profitable Mechanical Invention. Thaleon Blake. In the present article the change brought about by mechanical engineers who are professional inventors is discussed, and the mistakes of untrained inventors. 1800 w. Sci Am—Nov. 3, 1906. Serial. 1st part. No. 80186.

The Commercial Management of Inventions at Home and Abroad (Die Verwertung Technischer Neuerungen im In- und Auslande). Hermann Scherbak. An address before the Austrian Section of the Ver. Deutscher Ing., on inventions, the securing of patents and their selling, licensing, etc. 3000 w. Zeitschr d Ver Deutscher Ing—Nov. 17, 1906. No. 81143 D.

The Pursuit of Inventing as a Business. George F. Stratton. Gives brief outlines of the methods of work of some successful inventors, and discusses the modern tendency to keep the inventor inventing, and place the exploitation of his inventions in the hands of business managers. 2000 w. Engineering Magazine—June, 1907. No. 84196 B.

The Utility of Inventions. John E.

### Iron Trade

Brady. Explains the meaning of utility as predicated of inventions and why some inventions are not patentable, giving examples of actual cases. 1800 w. Elec Wld—June 1, 1907. No. 84725.

### Iron Ore.

The North Swedish Iron-Ore Deposits. Editorial on the recent legislative action by which the Swedish State becomes the proprietor of half the share capital in the company owning the ore deposits which do not already belong to the State. 1700 w. Engng—April 26, 1907. No. 84255 A.

### Iron Trade.

The Chicago Iron Trade in 1906. A. O. Backert. A review of the production, consumption, extensions, prices, and related matters of interest. 3800 w. Ir Age—Jan. 3, 1907. No. 81368.

The Cincinnati Pig Iron Trade in 1906. James A. Green. A report, giving notes recorded monthly which reflect the conditions at the time they were written. 4000 w. Ir Age—Jan. 3, 1907. No. 81365.

The Philadelphia Iron Trade in 1906. Thomas Hobson. A review of the consumption, production, prices, materials, etc. 3800 w. Ir Age—Jan. 3, 1907. No. 81369.

The Pittsburgh Iron Trade in 1906. Robert A. Walker. A review of the general features, prices, new construction, labor, foreign trade, and products. 5500 w. Ir Age—Jan. 3, 1907. No. 81367.

The Lake Iron Ore Trade in 1906. Dwight E. Woodbridge. Remarks on the importance of the "Hill ore deal," developments in stripping, search for new mines, shipping, etc. 3000 w. Ir Age—Jan. 3, 1907. No. 81370.

Pig Iron and Ore. Gives statistics of production, a summary of commercial conditions, and a review of the industry. 13500 w. Eng & Min Jour—Jan. 5, 1907. No. 81480.

The International Outlook in the Iron Trade. J. Stephen Jeans. A brief discussion of the resources, demands, consumption, etc., in Europe and America. 4200 w. Mfr's Rec—Jan. 3, 1907. No. 81370.

The Development of the American Iron Industry. Edwin C. Eckel. A study of output and reserves, recent technical advances in ore treatment, and the influence of the Steel Corporation. 3500 w. Engineering Magazine—Feb., 1907. No. 81899 B.

The Mechanical Development of the German Iron Industry. J. H. Cuntz. An

## INDUSTRIAL ECONOMY

### Iron Trade

illustrated review discussing the importance of by-product coking, the utilization of furnace gases, and advanced practice in electric driving, as factors affecting the economy in the German iron industry. 3300 w. *Engineering Magazine*—March, 1907. No. 82637 B.

The Italian Iron Industry. (Italiens Eisenindustrie). H. Wedding. General account of the location and kind and amount of output of the principal iron works of Italy. Illus. 3400 w. *Stahl und Eisen*—Jan. 2, 1907. No. 81807 D.

The Royal Canal Commission and the Iron Trade. Evidence submitted by J. Stephen Jeans for the British Iron Trade Association, before the Royal Canal Commission. 4000 w. *Ir & Coal Trds Rev*—March 22, 1907. Serial. 1st part. No. 83432 A.

First Quinquennial Census of the Iron and Steel Industry. Reviews the report compiled by Story B. Ladd. 6500 w. *Ir Age*—July 4, 1907. No. 85441.

Forty-two Years in the Iron Trade. Dr. William Kent. A review showing the wonderful increase in production. 6500 w. *Ir Trd Rev*—Jan. 10, 1907. No. 81551.

Presidential Address. Sir Hugh Bell. A review of the iron trade during the last 100 years. Also an appendix giving a chronological table of some of the more important events connected with iron and steel, during the time covered. 5000 w. *Ir & Coal Trds Rev*—May 10, 1907. No. 84611 A.

Combination and Competition in the Steel Trade. T. Good. A review of the market and of manufacturing conditions in England, Germany, and America. 3500 w. *Engineering Magazine*—Nov., 1907. No. 87966 B.

### Labor.

Capital and Labor. John B. Kreischer. Address before the Stevens Engng. Soc. Considers the present conditions in the United States. 3500 w. *Stevens Ind*—Oct., 1906. No. 81092 D.

A Decision on Rates of Pay for Steam Shovel Men and Engine Runners on the Panama Canal Work. A statement concerning the present rates of pay for the classes of labor named. 1700 w. *Eng News*—May 9, 1907. No. 84208.

The Labor Problem of the Panama Canal. A. Beeby Thompson. An account of the extensive work accomplished in the solving of the housing, feeding, and health problems, with a discussion of the labor supply. 2800 w. *Engng*—May 3, 1907. No. 84344 A.

### Laboratories

White Labor Situation on the Rand. G. A. Denny. An explanation of present conditions, especially the attitude of the rock-drill miners. 2200 w. *Min Jour*—May 11, 1907. No. 84440 A.

The Labor Movement. Robert Gunn Davis. A psychological study, reviewing briefly the evolution and the social tendencies of trades unionism. Principally confined to conditions in England. 4500 w. *Westminster Rev*—June, 1907. No. 85259 D.

See also Apprenticeship, Arbitration, Employer's Liability, Management, Open Shop, Socialism and Strikes, under INDUSTRIAL ECONOMY.

### Labor Agreement.

An Industrial Agreement. Gives the text of the agreement between the Employers' Federation and three unions, which has been provisionally signed by the representatives of both sides, and is awaiting the ratification of the constituents. Also editorial. 2500 w. *Engr*, Lond—May 3, 1907. No. 84351 A.

Labor Agreement in the Engineering Trades. Editorial reviewing the terms of agreement settled on March 22, 1907, which are soon to be ratified or condemned by the votes of the whole body of members of the unions. 1900 w. *Engng*—July 26, 1907. No. 86180 A.

### Labor Insurance.

Insurance of Labor in Germany. Information in regard to the system, and the laws of Germany which provide against accidents, and for sickness, incapacity and old age; and also the provision made by private companies. 4000 w. *Engng*—April 19, 1907. No. 84004 A.

Insurance of Labor in Italy. Editorial on the Italian law which deals with the compensation to workmen for accidents, and some of the frauds perpetrated, with an explanation of the National Provident Fund. 2300 w. *Engng*—Feb. 1, 1907. No. 82296 A.

See also Employer's Liability, under INDUSTRIAL ECONOMY.

### Labor Legislation.

A Short History of Labor Legislation in Great Britain. A. Maurice Low. Discusses principally factory conditions and legislation. 21500 w. *Bul Bureau of Labor*—May, 1907. No. 85263 N.

### Laboratories.

The New Testing Laboratory at Charlottenburg. Describes this new laboratory at Gross-Lichterfelde, illustrating many of the testing machines employed in testing materials to be used for scientific and

## INDUSTRIAL ECONOMY

### Library System

commercial purposes. 2800 w. Engr, Lond—March 29, 1907. No. 83552 A.

The National Physical Laboratory as a Commercial Testing Establishment. Reprint articles bearing upon the policy of the National Physical Laboratory of England, with criticism. 5400 w. Engr, Lond—Feb. 15, 1907. No. 82610 A.

### Library System.

The Library System of Stone & Webster. G. W. Lee. A paper describing the library system of a firm having general control of some thirty public service corporations in various parts of the country. The library is at the service of them all, though particularly for the headquarters in Boston. 4500 w. Eng Rec—Aug. 24, 1907. No. 86561.

### Lowest Tender.

Ethics of the Lowest Tender. Ian Gorach. Discusses some of the ethical considerations relating to tenders. 1600 w. Elec Rev, Lond—July 26, 1907. No. 86162 A.

### Management.

The Efficiency of the Worker and His Rate of Pay. Clive Hastings. Presents the advantages and disadvantages of the day rate, piece work and the bonus systems, with suggestions for determining a just wage. 3000 w. Am Engr & R R Jour—June, 1907. No. 84791 C.

Fixing Premium Rates Discussed. Forrest R. Cardullo. Condemns old methods and suggests a new one based on minimum total cost and no limit to possible earnings. 2500 w. Am Mach—Vol. 30, No. 31. No. 86055.

The Methods of Exact Measurement Applied to Individual and Shop Efficiency at the Topeka Shops of the Santa Fe. Harrington Emerson. Describes the results accomplished at these shops, and the methods used. 3300 w. Am Engr & R R Jour—June, 1907. No. 84788 C.

Shop Efficiency. H. W. Jacobs. Gives the efficiency records of various workmen where the bonus system has been adopted, giving the results of the system. 1600 w. Am Engr & R R Jour—Oct., 1907. No. 87415 C.

Roundhouse Betterment Work. J. F. Whiteford. A description of a system of rewarding individual ability through increased pay as solved on the Santa Fe. 2200 w. Am Engr & R R Jour—June, 1907. No. 84786 C.

Modern Factory Management. Egbert P. Watson. Discusses some phases of shop administration, illustrating by examples the qualities of a successful man-

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ager, and considering the changes that have recently been introduced. 3500 w. Cassier's Mag—Dec., 1906. No. 80745 B.

Modern Shop Practice from an Inspector's Standpoint. D. W. M'Naugher. Considers unskilled labor responsible for most of the troubles met. Discussion. 6000 w. Pro Engrs' Soc of W Penn—Feb., 1907. No. 83035 D.

The Passage of an Order Through Office and Shop. W. R. Koller. Follows the more important steps of the order and that part of the routine in office and shop which bears directly on its passage. Explains the card-filing system. Ills. Discussion. 10700 w. No. 67. Pro Brooklyn Engrs' Club—1906. No. 85973 N.

Economy in Shop Management—Conditions Leading to Minimum Costs of Production. D. C. Eggleston. Suggestions for saving in prime costs. 1300 w. Am Mach—Nov. 15, 1906. No. 80389.

Notes on Works Management. R. A. Smart. Outlines the requisites of an industrial organization, discussing some of the more important functions and the methods in common use for controlling them. 3500 w. Purdue Engng Rev—1907. No. 85932 N.

The Utilization of Labor. Henry L. Gantt. A study of the economical utilization of labor. 5000 w. Stevens Ind—Jan., 1907. No. 83307 D.

The Proper Management of Labor, a Weighty Factor in Commercial Success (Richtige Arbeitsdisposition, ein wichtiger Faktor des Finanziellen Erfolges). Max Arbeiter. Discusses cost keeping, works organization, etc., with examples of methods from actual plants. Ills. 2500 w. Elektrotech u Maschinenbau—June 9, 1907. No. 85660 D.

The Drafting Room, Its Location and Work. Oscar E. Perrigo. The first of a series on shop management and cost keeping. 3300 w. Ir Trd Rev—Oct. 3, 1907. Serial. 1st part. No. 87405.

Profit Making in Shop and Factory Management. C. U. Carpenter. The first of a series analyzing the common causes of "leaks," loss, and failure, and pointing out the plain, practical methods for bringing any manufacturing business up to its maximum possible productiveness and profit. 4500 w. Engineering Magazine—Jan., 1907. No. 81199 B.

Profit Making in Shop and Factory Management. C. U. Carpenter. This second article of a series deals with the practical working of the committee system showing its success. 5000 w. Engineering Magazine—Feb., 1907. No. 81801 B.

## INDUSTRIAL ECONOMY

### Management

**Profit Making in Shop and Factory Management.** C. U. Carpenter. This third article of a series on the application of the "Committee System of Management," deals with the drafting-room and the tool-room, and the requirements for efficient work. 4500 w. *Engineering Magazine*—March, 1907. No. 82640 B.

**Profit Making in Shop and Factory Management.** C. U. Carpenter. This fourth article of a series shows the great importance and value of tool-room reorganization, suggesting methods for realizing the maximum possibilities of the tool-room. 3500 w. *Engineering Magazine*—April, 1907. No. 83313 B.

**Profit Making in Shop and Factory Management.** C. U. Carpenter. This fifth article of a series considers the operation of the machine tools, and conditions necessary for manufacturing at minimum cost. 6000 w. *Engineering Magazine*—June, 1907. No. 84194 B.

**Profit-Making in Shop and Factory Management.** C. U. Carpenter. This sixth of a series of articles deals with methods for fixing standard times for manufacturing operations. 4500 w. *Engineering Magazine*—July, 1907. No. 85308 B.

**Profit Making in Shop and Factory Management.** C. U. Carpenter. This seventh of a series of articles gives a study of the proper time of assembling work. 2200 w. *Engineering Magazine*—Aug., 1907. No. 85916 B.

**Profit Making in Shop and Factory Management.** C. U. Carpenter. This eighth article of the series considers cost-keeping, stock-keeping and the wage system. 4000 w. *Engineering Magazine*—Sept., 1907. No. 86611 B.

**Profit Making in Shop and Factory Management.** Charles U. Carpenter. This ninth article of a series discusses the up-building of a selling organization. 4500 w. *Engineering Magazine*—Nov., 1907. No. 87967 B.

See also Accounting, Cost Keeping, Industrial Betterment, Labor, Profit Sharing, Stock Keeping, and Wages, under INDUSTRIAL ECONOMY.

### Mexican Labor.

**Present Labor Conditions in Mexico.** A. H. Tays. An illustrated article describing the characteristics of the Mexican peon, his mode of life and efficiency as a workman, and the bad results following the raising of wages in Sonoro. 2200 w. *Eng & Min Jour*—Oct. 5, 1907. No. 87461.

### Mexico.

**Mexico and Her Opportunities.** Win-

### Municipal Ownership

**thrope Scarritt.** Describes this country and outlines its history, and gives information regarding its industries and opportunities for investment of capital. 4500 w. *Cassier's Mag*—Nov., 1906 No. 80207 B.

### Motive Power.

**Statistics and Economic Importance of the Motive Power Problem** (*Statistique et Importance Economique de la Force Motrice Technique*). C. Ballod. Discusses the importance of the motive power problem in relation to agriculture and industry and the status of gas motors, wind, water and sun power, with statistical information. 10000 w. *Rev Econ Inter*—May, 1907. No. 84912 H.

### Municipal Ownership.

**The New Orientation of the Municipal Administrations** (*L'Orientation Nouvelle des Régies Communales*). Ernest Brees. Review of Municipal Ownership in Europe and the new system of concession with profit-sharing, its advantages and disadvantages. 12600 w. *Rev Econ Inter*—March, 1907. No. 83692 E + F.

**How Chicago is Solving Municipal Ownership of Transportation Facilities.** C. Frederick Collins. Explains the present condition of transportation facilities in Chicago, and the ordinances recently passed which gives the city 55 per cent. of the net profits, and yet leaves the operation of the lines under the management of practical street railway men. 1500 w. *Sci Am*—May 25, 1907. No. 84544.

✓ **Municipal Ownership in England.** R. S. Hale. A general discussion of the subject, and of the operation of gas and water works. 4500 w. *Cassier's Mag*—May, 1907. Serial. 1st part. No. 84047 B.

**Expert Investigations in Municipal Ownership.** Information from a general review of the examinations made in the United States of municipal and private plants by the Municipal Ownership Committee of the National Civic Federation. 2500 w. *Elec Wld*—July 20, 1907. Serial. 1st part. No. 85845.

**General Conclusions of the Municipal Ownership Committee of the National Civic Federation.** A summary of the conclusions reached by the National Civic Federation, with editorial comment. 4000 w. *Eng News*—Aug. 15, 1907. No. 86390.

✓ **Municipal Ownership of Public Utilities.** John W. Hill. From a paper before the Cent. States W.-Wks. Assn. Arguments opposed to municipal ownership and operation. 3000 w. *Eng News*—Oct. 10, 1907. No. 87549.

**Municipal Electric Lighting.** Ernest S. Bradford. A review of conditions and



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## New South Wales

statistics in the United States. 3000 w. *Munic Jour & Engr*—Aug. 21, 1907. No. 86498 C.

## New South Wales.

The Mineral Industry of New South Wales. F. S. Mance. The output for 1906 shows an increase in value of £1,083,000 as compared with the production of 1905. 2000 w. *Eng & Min Jour*—May 11, 1907. No. 84315.

## Oil Industry.

The Future of the Oil Industry in California. Edmond O'Neill. Outlines the past history, and briefly considers the changed conditions, and the problems of transportation, markets for the oil, and related matters. Considers the future outlook bright. 1500 w. *Cal Jour of Tech*—April, 1907. No. 83953.

## Open Shop.

The True Meaning of the Open Shop. James W. Van Cleave. An authoritative statement of the aims of the proposed educational campaign of the National Assn. of Manufacturers and the purpose in forming the federation and raising the fund for the work. 3000 w. *Engineering Magazine*—July, 1907. No. 85304 B.

## Pacific Coast.

The Pacific Coast: An Inspiration to America. Albert Phenix. A review of the development and the causes of its prosperity. 5000 w. *Mfrs Rec*—June 27, 1907. Serial. 1st part. No. 85287.

## Packing.

Proper Packing. From the *Daily Consular and Trade Reports* of the Department of Commerce and Labor. Deals with the handling of machinery and parts for export. 3000 w. *Ir Age*—March 21, 1907. No. 83140.

The Packing of Machinery for Export. W. E. Partridge. An illustrated article describing methods employed successfully in shipping over long routes self-contained machines weighing from 500 to 1500 pounds. 2000 w. *Cassier's Mag*—April, 1907. No. 83335 B.

## Panama.

New York and Panama. A Contrast in Engineering Achievement. Ernest John Munby. An illustrated account of the extensive work connecting Manhattan with the mainland by numerous tunnels under the rivers, which is being executed under public contract, comparing it with the work at Panama. 4000 w. *Engineering Magazine*—April, 1907. No. 83310 B.

## Panics.

Economic Crises, Their Causes and

## Railroads

Prevention (Wirtschaftliche Krisen Ihre Ursachen und Ihre Verhütung). Dr. Flechtner. Discussion of the influence of excessive production, changes in the money metals, speculation and other causes of business depression, the effect of cartels or trusts in preventing panics, etc. 2500 w. *Zeitschr d Ver Deutscher Ing*—Oct. 20, 1906. No. 80602 D.

## Patents.

Patents as a Factor in a Manufacturing Business. Edwin J. Prindle. A concluding paper of a very important series, dealing with the business law and ruling decisions as to patents for inventions made by employees. It shows how ownership would be decided or should be secured under all ordinary conditions. 4000 w. *Engineering Magazine*—Dec., 1906. No. 80699 B.

The Cost of a Golden Age. A. S. Fitch. Remarks on the achievements of the past half century in the line of important inventions, showing the debit side of the patent account. 2800 w. *Am Mach*—Vol. 30, No. 6. No. 82166.

See also Inventions, under INDUSTRIAL ECONOMY.

## Philippine Islands.

Engineering Works and Surveys in the Philippine Islands. G. R. Putnam. An outline of the progress in engineering works and surveys since the American occupation, describing the features of the islands of interest to engineers. 5000 w. *Eng News*—June 20, 1907. No. 85160.

## Power Plants.

The Central Station and the Isolated Plant. H. S. Knowlton. Discusses the considerations governing the selection of each class of service for industrial purposes. 2800 w. *Cassier's Mag*—Aug., 1907. No. 86013 B.

## Profit Sharing.

Sharing Profits of a Great Corporation. Remarks on the success of the Perkins plan of employee stockholders. 1200 w. *Ir Trd Rev*—Dec. 20, 1906. No. 81068.

## Railroads.

The Relationship of the Railroads to the People. Samuel Spencer. From an address delivered before the Alabama Agricultural Assn., Oct. 25, 1906. 3000 w. *R R Gaz*—Dec. 7, 1906. No. 80874.

Some of the Relations of Railway Transportation in the United States to Mining and Metallurgy. James Douglas. An interesting study of the effect of transportation on these industries; the effect of fuel and its value, and related problems of importance. 8500 w.

## INDUSTRIAL ECONOMY

### Railway Construction

Sch of Mines Qr—Nov., 1906. No. 80854 D.

### Railway Construction.

The Engineering Organization of the Western Pacific Railway Company. George P. Low. Describes the engineering organization for one of the heaviest pieces of railway building ever undertaken, covering 76 miles between Oroville and Spanish Creek Crossing, Cal. 5000 w. Eng Rec—Aug. 3, 1907. No. 86086.

### Railway Valuation.

See Improvements, under RAILWAY ENGINEERING, PERMANENT WAY.

### Safety Devices.

An Exposition of Safety Devices and Industrial Hygiene. Gives startling facts in regard to the great sacrifice of human life in industrial vocations, and illustrates some of the safety devices exhibited at an exposition at the American Museum of Natural History, New York City. 2000 w. Sci Am—Jan. 26, 1907. No. 81927.

First International Exposition of Safety Devices and Industrial Hygiene. An account of the exhibition at the American Museum of Natural History, New York City, of safety devices for the prevention of accidents to workmen. Also editorial. 4500 w. Eng News—Feb. 14, 1907. No. 82295.

### Securities.

Street Railway Securities—A Symposium. Contributions by Max Teichmann, Carl H. Nau, R. S. Buchanan, and editorial introduction by W. H. Lough, Jr. 3800 w. Jour of Acct—June, 1907. No. 85125 C.

Street Railway Bonds as Investments. Herbert G. Stockwell. A comparison with steam railroad bonds. 4500 w. Jour of Acct—June, 1907. No. 85126 C.

### Socialism.

Concerning Wealth and Wage Earners. Editorial making a comparison between the earnings of capital and the earnings of labor, and giving much information of interest. 3000 w. Eng News—Aug. 1, 1907. No. 86079.

### South America.

An Awakened Continent to the South of Us. Elihu Root. An address before the Trans-Mississippi Commercial Congress, Kansas City, Missouri. A discussion of the steps needed to encourage the commerce and trade with South America. 7500 w. Nat Geog Mag—Jan., 1907. No. 83011 C.

American Trade Opportunities and

### Tariff

Handicaps in South America. Lewis R. Freeman. Discusses the obstacles that work to the disadvantage of American trade. 4500 w. Engineering Magazine—Sept., 1907. No. 86606 B.

### Steamship Lines.

The Consolidated Steamship Lines. Information concerning the recent consolidation by Charles W. Morse, of the lines on the Atlantic and Gulf coast. Ills. 1200 w. R R Gaz—Oct. 4, 1907. No. 87925.

### Steel Works.

The Productive Efficiency of Steel Works. James Waite. Abstract of a paper read before the Cleveland, Eng. Inst. of Engrs. Suggestions for tracing the inefficiencies, and describing British practice. 1500 w. Ir Age—Jan. 31, 1907. No. 82016.

### Stock Keeping.

A Theory of Stores Operation for Machine Shops. H. L. Whittemore. A valuable contribution to the subject of stores stock supplies and keeping track of and Hunt. Describes the system employed by the Cincinnati Planer Co. for ordinary keeping, explaining a method which proved useful in a large manufacturing business. 5000 w. Engineering Magazine—May, 1907. No. 83939 B.

A Stock Keeping System. Howard Hunt. Describes the system employed by the Cincinnati Planer Co. for ordinary stock supplies and keeping track of and distributing to the shop. 800 w. Ir Age—June 20, 1907. No. 85140.

Storekeeping at the Navy Yards. John A. Mudd. A discussion of the difference between storekeeping under the Naval Supply Fund and that under the Bureau Appropriations, showing the economy and advantages of the former, and related subjects. 18500 w. Pro U S Nav Inst—March, 1907. No. 84023 F.

### Strikes.

Peace in Labor Affairs. Editorial discussion of the strike in the British ship-building trade. 2300 w. Engng—Aug. 23, 1907. No. 86731 A.

The Strike Situation in San Francisco. Henry K. Brent. Describes the conditions under which strike-breakers worked, discusses causes of the strike, etc. 5500 w. St Ry Jour—Sept. 21, 1907. No. 87171.

The Common Law on Strikes. A summary of court decisions on labor troubles, taken from the last report of the Commissioner of Labor. 2500 w. Ir Age—Sept. 26, 1907. No. 87230.

### Tariff.

French Tariff Negotiations. A statement of the attitude of the French Gov-

## INDUSTRIAL ECONOMY

### Tin Plate

ernment toward the reciprocity treaty, calling attention to a forgotten law, and outlining the satisfactory negotiations now being conducted. 1100 w. *Ir Age*—July 18, 1907. No. 85729.

### Tin Plate.

Quinquennial Census of the Tin and Terne Plate Industry. A review of the report for the quinquennial census of 1905, prepared by Story B. Ladd. 2000 w. *Ir Age*—July 11, 1907. No. 85480.

### Trade Cycles.

Trade Cycles. Herbert Foster. Considers the periodic rise and fall in prices, wages, etc., and gives charts tending to show the operation of a general law. 1500 w. *Ir Age*—Oct. 24, 1907. No. 87876.

### Trade Schools.

See Education, under INDUSTRIAL ECONOMY.

### Trade Secrets.

The Ethics of Trade Secrets. Frederick P. Fish. Remarks on the part trade secrets have played in the industries of the past, and the present laws for the protection of such information, giving test cases, and showing their justice. 12800 w. *Pro Am Soc of Mech Engrs*—Feb., 1907. No. 82501 F.

### Transportation.

Transportation on Railways and Waterways (*Die Transportverhältnisse auf*

### Wages

*Eisenbahnen und Wasserstrassen*). Carl Schott. A general discussion of heavy freight transportation in America and Germany, particularly on German waterways. 5000 w. *Zeitschr d Ver Deutscher Ing*—Oct. 27, 1906. No. 80605 D.

### Tyneside.

Tyneside Industrial Progress and Prospects. A review of the industrial situation and economic conditions of this district and its suitability for new works; its industrial progress and prospects. Map. 5000 w. *Engng*—Feb. 1, 1907. Serial 1st part. No. 82252 A.

### U. S. Customs.

The United States Customs Service. Charles Leo Frank. Considers the organization and administration of that portion of the Customs Service which is directly concerned with the collection of duties on articles imported. 2200 w. *Jour of Acct*—June, 1907. No. 85127 C.

### U. S. Steel Co.

The United States Steel Corporation's Annual Report. Information of interest from this report, which shows the largest gross and net earnings in its history. 4000 w. *Ir Age*—March 21, 1907. No. 83142.

### Wages.

The Wages Problem (*Le Problème des Salaires*). Dr. Franz Oppenheimer. A discussion of the economic problems connected with the fixing of wages. 6000 w. *Rev Econ Inter*—July, 1907. No. 86281 H.

## MARINE AND NAVAL ENGINEERING

### American Navy

#### American Navy.

The Vessels and Guns of the Old Navy, 1775-1850. Dr. Charles Oscar Paullin. An illustrated description of the naval vessels of the revolutionary war, and of the war of 1812 and the first half of the 19th century. 2700 w. Sci Am—June 29, 1907. No. 85315.

The American Fleet from an English Point of View. Archibald S. Hurd. Discusses the strength and weaknesses of the American navy. Considers it the second greatest naval force in the world, but lacking in officers and men. Ills. 2500 w. Cassier's Mag—Oct., 1907. Serial. 1st part. No. 87384 B.

#### Armor.

Modern Armor and Armor-Piercing Projectiles. H. J. Jones. Discusses some of the problems relating to this subject, giving much information. 11000 w. Jour Am Soc of Nav Engrs—Aug., 1907. No. 87767 H.

The Development of Armored War Vessels. J. H. Morrison. The present article reviews the use of armor plating in the United States. Ills. 2800 w. Sci Am Sup—Aug. 31, 1907. Serial. 1st part. No. 86679.

#### Astronomy.

Nautical Astronomy Simplified. Clarence E. Long. Aims to show the usefulness of observing stars for azimuth in ascertaining the deviations of the compass, or for setting the course, giving some useful facts about Polaris and the Big Dipper. 12000 w. Marine Rev—March 28, 1907. No. 83347.

Navigation by Celestial Observation. Stephen P. M. Tasker. The present number shows how to locate one's self by day or night. 1500 w. Int Marine Engng—Oct., 1907. Serial. 1st part. No. 87198 C.

#### Auxiliary Machinery.

Auxiliary Machinery on Merchant Steamers. An illustrated description of auxiliary machinery for engine and boiler-room, for draught and ventilation, refrigeration, deck machinery, steering gears, etc. Supplement also. 22500 w. Engr, Lond—June 21, 1907. No. 85403 A.

### Battleships

#### Barges.

Barges for Shipment of Coal and Ore. Illustrations and description of a "bunkering barge" intended for discharging coal directly into the bunkers of a steamer. 800 w. Engng—June 28, 1907. No. 85503 A.

#### Battleships.

U. S. S. Minnesota. R. T. Hall. Illustration, description and report of official trial. 10000 w. Jour Am Soc of Nav Engrs—Nov., 1906. No. 81281 H.

U. S. Battleship Nebraska. Arthur Crenshaw. Illustrations, description, and report of trials. 5000 w. Jour Am Soc of Nav Engrs—Nov., 1906. No. 81278 H.

Speed Trials of the Battleship "Vermont." Illustrated description of this battleship, with report of the standardization trials. 700 w. Sci Am—Jan. 5, 1907. No. 81380.

Testing the New Battleship Vermont. An illustrated account of the severe trials made last December during stormy weather. Ills. 1500 w. Naut Gaz—March 7, 1907. No. 82844.

U. S. S. Kansas. William Ashley Leavitt, Jr. Illustrated description of the vessel and its equipment, with report of official trials. 12500 w. Jour Am Soc of Nav Engrs—May, 1907. No. 85767 H.

The British Battleship "Dreadnought" (Le Cuirassé Anglais "Dreadnaught"). L. Piaud. Illustrated description. 4000 w. Génie Civil—Nov. 3, 1906. No. 80628 D.

The Tactical Qualities of the "Dreadnought" Type of Battleship. W. S. Sims. Gives the main points of an interesting report favoring this type. Also editorial. 10300 w. Engng—Jan. 11, 1907. No. 81749 A.

The "Dreadnought" ("Dreadnought"). Ernst Müller. A detailed description, from both technical and naval points of view. 2500 w. Serial. 1st part. Schiffbau—July 10, 1907. No. 86246 D.

The New Battleships of the French Navy (Les Nouveaux Cuirassés de la Marine Française). L. Piaud. Illustrated description of the "Patrie" and her class, with record of trials. 1 plate.

## MARINE AND NAVAL ENGINEERING

### Battleships

3000 w. Génie Civil—Dec. 1, 1906. No. 81134 D.

French Battleships République and Patrie. J. Peltier. Illustrations, description of vessels and equipment, report of trials, and comparison with the American battleship Virginia. 1600 w. Int Marine Engng—Aug., 1907. No. 85905 C.

Speed in Battleships. An editorial review of the expressed views of Capt. A. F. Mahan, on the value of speed in a battleship, as given in a recent paper on the battle of the Sea of Japan. 5000 w. Engng—Nov. 16, 1906. No. 80728 A.

The Battleship of the Future. Forrest E. Cardullo. A discussion of the "Dreadnought," and the general lines along which battleship design may be expected to progress. Ills. 3000 w. Sci Am—Feb. 9, 1907. Serial. 1st part. No. 82177.

Notes on the Development of Warship Design. R. H. M. Robinson. Read before the Soc. of Nav. Archts. & Marine Engrs. Discusses points in the development, construction and equipment of warships. 9000 w. Marine Rev—Jan 31, 1907. No. 82099.

The Size of Battleships as a Function of Their Speed. M. J. A. Normand. Trans. from *Bul. de L'Assn. Tech. Maritime*. Aims to give an approximate solution of the problem of determining how the size of fighting ships varies with their speed, when their offensive and defensive powers, as well as their radius of action, remain unchanged. Also comments by D. W. Taylor. 3500 w. Pro U S Nav Inst—March, 1907. No. 84024 F.

Ventilation and Refrigeration of Ammunition-Holds. Adrien Bochet. Abstract trans. of a paper read at the Bordeaux Int. Cong. Discusses methods of insulating holds, and ventilation by cooled air. 2200 w. Engng—July 26, 1907. No. 86185 A.

The Results of the Russo-Japanese War in their Effect on the Further Development of War Ships (Die Ergebnisse der Russisch-Japanischen Seekrieges in ihrer Wirkung auf die Weiterentwicklung im Kriegsschiffbau). G. Neudeck. Ills. 6000 w. Serial. 2 parts. Schiffbau—Sept. 11 and 25, 1907. No. 87630, each D.

See also American Navy, Armor and War Ships, under MARINE AND NAVAL ENGINEERING.

### Boiler Cleaning.

Cleaning Marine Boilers. Lieut. H. C. Dinger. A general description of latest methods, especially those in use in naval service. 3500 w. Int Marine Engng—Oct., 1907. No. 87196 C.

### Boilers.

Some Practical Notes on the Care and Preservation of the Marine Type of Babcock & Wilcox Boilers. B. Heggengaugen. Suggestions on getting a new boiler ready for steaming, getting up steam, firing, cleaning and inspection, feed water, etc. 8200 w. Jour Am Soc of Nav Engrs—Nov., 1906. No. 81282 H.

Combustion in Marine Boilers. Peter Youngsoh. An illustrated description of Howden's forced draught system, with introductory remarks. 3300 w. Marine Rev—March 7, 1907. No. 82812.

A New Cylindrical Marine Fire Tube Boiler. Benjamin Taylor. Illustrates and describes the invention of Mr. Inglis, which is designed to increase the efficiency of the "Scotch" boiler, particularly when working under forced draught in a closed stokehold. 800 w. Boiler Maker—July, 1907. No. 85356.

See also Corrosion, Feed Water and Firing, under MARINE AND NAVAL ENGINEERING.

### Bruges.

The Harbor and Ship Canal of Bruges (Die Häfen und der Seekanal von Brügge). Abstract of a paper by M. L. Coisseau describing the harbor-improvement projects outlined in 1891 and the progress made. Ills. 35000 w. Oest Wochenschr f d Oeff Baudienst—April 6, 1907. No. 84177 D.

### Buoys.

Mooring-Buoy for the "Lusitania" and "Mauritania." Illustrates and describes the largest mooring-buoy that has ever been made. 500 w. Engng—Aug. 23, 1907. No. 86728 A.

Regarding Spar Buoys. C. H. Claudy. An illustrated article on the service and care of spar buoys. 1000 w. Sci Am—Sept. 21, 1907. No. 87123.

### Cable Steamer.

New Japanese Cable Steamer. Particulars of the "Ogasawara Maru," built in Japan. Ills. 2500 w. Elect'n, Lond—April 12, 1907. No. 83873 A.

The Cable Steamer Ogasawara Maru. S. Oi. Illustrated description of this new Japanese steamer and its equipment. 2500 w. Int Marine Engng—Aug., 1907. No. 85908 C.

### Cargo Steamers.

The Evolution of the Modern Cargo Steamer. S. J. P. Thearle. Read before the Inst. of Naval Archts. Reviews the development of the modern ocean cargo steamer during the past forty years. The present article discusses the external form

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### Cargo Steamers

and outline, decks, etc. 5800 w. *Int Marine Engng*—May, 1907. Serial. 1st part. No. 83898 C.

Special Types of Hull Construction for Cargo Steamers. Gives illustrated descriptions of types built in England, showing progress. 2000 w. *Eng News*—April 4, 1907. No. 83447.

Structural Development in British Merchant Ships. J. Foster-King. Read before the Inst. of Nav. Archts. A review of the development, referring especially to the Great Eastern, and to the Mauretania and Lusitania, and other types, and discussing features of design. Ills. 4800 w. *Engng*—July 19, 1907. No. 85997 A.

Bulk Freighter William M. Mills. Illustrated description of one of the largest vessels on the lakes. 1000 w. *Marine Rev*—Sept. 5, 1907. No. 86825.

The Steel Freight Steamer Satilla. Illustrates and describes one of four freight steamers which have attracted interest on account of the arrangement adopted for the cargo spaces and the placing of the machinery. 700 w. *Int Marine Engng*—March, 1907. No. 82662 C.

### Channel Ferry.

The Proposed Channel Ferry Service. An account of a through rail connection proposed between England and France, with description of engineering features of interest. Ills. 2500 w. *Engng*—Dec. 7, 1906. No. 81026 A.

### Coaling.

The "Express" Coal-Bagging Lighter for Coaling War Vessels in Harbor. Illustrates and describes a new type of coal-bagging lighter being tried by the British naval authorities. 2000 w. *Sci Am*—Feb. 2, 1907. No. 82083.

A New Sea Anchor for Coaling at Sea. Spencer Miller. An illustrated article reporting experiments and conclusions regarding sea anchors employed in marine cableways for coaling at sea. 1700 w. *Ir Age*—Nov. 29, 1906. No. 80765.

### Coaling Barge.

The Clarke Automatic Coaling-Barge. Illustrates a type of these coaling barges used for coaling "over-all," explaining its working. 800 w. *Engng*—Jan. 18, 1907. No. 81999 A.

### Coaling Vessel.

Self-Propelling Coaling Vessel. Illustrates, and briefly describes, a vessel for coaling steamships, with automatic self-registering weighing machine. 700 w. *Sci Am Sup*—Sept. 21, 1907. No. 87127.

### Corrosion

#### Combustion Motors.

Internal-Combustion Engines for Marine Purposes. James Tayler Milton. States the conditions to be satisfied by a successful marine engine, discussing the application of internal-combustion engines, especially dealing with variable speed and balancing. Discussion and correspondence. 20800 W. *Inst of Civ Engrs*, No. 3678. No. 86370 N.

The Diesel Engine for Ship Propulsion (Der Diesel Motor als Schiffsmaschine). R. Gertz. A study of the possibility of using it in large ships. Illus. 2200 w. *Schiffbau*—Jan. 23, 1907. No. 83610 D.

Recent Progress in Internal-Combustion Motors for Marine Purposes (Recenti Progressi dei Motori Marini a Combustione Interna). I. D. Cardile. Ills. 15,000 w. *Rivista Marittima*—Feb., 1907. No. 82997 E + F.

The Gasoline Motor in Shallow-Draft Vessels. An illustrated account of an experiment being carried out by the Thornycroft Company with shallow-draft vessels for freight service. 1000 w. *Sci Am*—March 30, 1907. No. 83296.

Internal-Combustion Engines and Their Application to War Ships (Die Verbrennungskraftmaschine und ihre Verwendung auf Kriegsschiffen). Emil Capitaine. Abstract of a paper in the "Schiffbautechnischen Gesellschaft." Ills. 3000 w. *Elektrotech u Polytech Rundschau*—April 4, 1907. No. 84168 D.

See also Fishing Vessel, Gas Engines, Motor Boats, Schooner and Torpedo Boats, under MARINE AND NAVAL ENGINEERING.

#### Compasses.

Compasses on Lake Steamers. Clarence E. Long. Discusses the deviation and changes that make the use of the compass difficult, and methods of verifying or checking the course, giving problems to illustrate. Especially explaining the use of Baxter's compass diagram. 3800 w. *Marine Rev*—July 25, 1907. No. 85965.

#### Condensers.

Notes on Vacuum in Connection with Marine Machinery. H. C. Dinger. Discusses various matters that affect the vacuum, and how to get the most out of the condensing apparatus. 1500 w. *Int Marine Engng*—June, 1907. No. 84659 C.

See also Corrosion, under MARINE AND NAVAL ENGINEERING.

#### Corrosion.

Corrosion of Steel Boiler Tubes on Vessels Fitted with Turbine Engines. J. Edward Palmer. An account of an inter-

## MARINE AND NAVAL ENGINEERING

### Corrosion

esting case of unusual corrosion caused by copper carried from the bronze turbine blades, by the steam. 800 w. Jour Am Soc of Nav Engrs—Feb, 1907. No. 83770 H.

Corrosion of Propeller Shaft, U. S. S. Rhode Island. Henry E. Rhoades. Drawing and descriptive account of the condition discovered, with the writer's explanation of the possible cause. 1200 w. Jour Am Soc of Nav Engrs—May, 1907. No. 85763 H.

The Experiments Made by Mr. Uthemann to Discover a Process for Preventing the Corrosion of Copper and Brass by Sea-Water Under the Conditions Found in the Surface-Condensers of Marine Steam-Engines. B. F. Isherwood. Trans. from *Le Génie Civil*. 7000 w. Jour Am Soc of Nav Engrs—Aug., 1907. No. 87761 H.

### Crane.

A 150 Ton Hydraulic Crane (Grue Hydraulique de 150 Tonnes). F. Hofer. A description of a large crane recently installed at the Elswick dockyards, Newcastle-on-Tyne, England, illustrated by a detailed plate of the operating mechanism. Ills. 1800 w. *Génie Civil*—April 13, 1907. No. 84112 D.

### Cruisers.

U. S. S. Milwaukee. E. P. Jessop. Illustration, description and report of official trial. 2500 w. Jour Am Soc of Nav Engrs—Nov., 1906. No. 81280 H.

The New United States Scout Cruiser "Salem." Illustrates and describes what is said to be the fastest ship in the U. S. Navy. 900 w. Sci Am — Aug. 17, 1907. No. 86416.

Scout Cruiser Salem. Illustrated description of the first cruiser to be launched in the United States equipped with Curtis turbines. 1400 w. Marine Rev—Sept. 12, 1907. No. 86899.

The American Scout Cruiser Salem. Illustrated detailed description of the vessel and its equipment. 1200 w. Int Marine Engng—Oct., 1907. No. 87197 C.

Launch of the New Scout Cruiser Birmingham. Illustrates and describes a new type of vessel for the U. S. Navy. 1500 w. Naut Gaz—June 6, 1907. No. 84835.

The Steam Trials of the Armored Cruiser "Warrior." Illustrates the four-cylinder triple-expansion engines, reporting the successful trials, and giving general information. 800 w. Engng—Feb. 8, 1907. No. 82468 A.

Launch of H. M. S. Indomitable. Illustration, account of the launch, and information of this first of three vessels of

### Diving Apparatus

the same class for the British Navy. 1700 w. Engr, Lond—March 22, 1907. No. 83429 A.

The Peruvian Cruiser Coronel Bolognesi. Illustrated description. 800 w. Engr, Lond—Feb. 1, 1907. No. 82261 A.

The Trials of the German Turbine Cruiser "Lubeck." A report of the long series of trials to which this first turbine cruiser of the German Navy has been submitted. 1800 w. Engng—Feb. 22, 1907. No. 82837 A.

Trials of the Lubeck. R. Veith. Reports the trials of the first of the larger turbine ships. 3500 w. Jour Am Soc of Nav Engrs—Feb., 1907. No. 83771 H.

The Russian Armored Cruiser "Rurik." Plan, dimensions and particulars of this recently launched vessel, describing the armament, propelling machinery, and pumping and draining arrangements. 3000 w. Engng—Nov. 16, 1906. No. 80725 A.

### Danger Signals.

Kilroy's System of Danger Signals for Warship-Turrets. A means of giving warning to the man in charge of a gun whenever his gun is so trained that by firing it might injure another gun is illustrated and described. It has been adopted by the British navy. 1500 w. Engng—May 10, 1907. No. 84444 A.

### Derelict Destroyer.

New United States Derelict Destroyer. Illustrated description of the plans for the first derelict destroyer, Revenue Cutter No. 17, for which bids have been solicited. 1000 w. Marine Rev—June 6, 1907. No. 84825.

### Destroyers.

The Italian Torpedo-Boat Destroyer "Espero." Illustrates and describes some recent additions to the torpedo flotilla of the Italian navy. 1000 w. Engng—Jan. 11, 1907. No. 81745 A.

New Italian Torpedo-Boat Destroyers. Illustrates and describes recent boats of this class. 700 w. Naut Gaz—Feb. 14, 1907. No. 82426.

The Ocean Race of Torpedo-Boat Destroyers. Brief account of the race over the 240-mile course from Sandy Hook to Cape Charles. Ills. 1000 w. Sci Am —June 15, 1907. No. 85014.

### Diving Apparatus.

The De Pluvy Diving Apparatus. Illustrates and describes a suit of metallic armor which will resist great pressure and thus enable a diver to descend 300 ft. or more. 1200 w. Sci Am Sup—Feb. 2, 1907. No. 82090.

## MARINE AND NAVAL ENGINEERING

### Dredges

#### Dredges.

Steam Seagoing Dredge "Thor" (Der Seedampfbagger "Thor" der Weichselstrombauverwaltung). Herr Meiners. Large dredge for harbor improvement service, with details of steam and electrical machinery installed. Ills. 2000 w. Zeitschrift Des Vereines Deutscher Ingenieure—Dec. 8, 1906. No. 81824 D.

The Dredge "Independent." Illustrated detailed description of the 4½-yd. dipper dredge used constantly since 1906, in the extension of South Brooklyn docks. 1400 w. Eng Rec—June 1, 1907. No. 84700.

See also Dredging, under CIVIL ENGINEERING, WATERWAYS AND HARBORS.

#### Dry Docks.

Modern Floating Docks. Lyonel Edwin Clark. Read before the Inst. of Naval Archts. A critical discussion of types now in use. 7000 w. Engng—April 5, 1907. No. 83744 A.

Modern Floating Dry Docks. A. C. Cunningham. A lecture at the Mass. Inst. of Tech. An illustrated article explaining in a general way the important principles of floating dry docks. 7000 w. Tech Qr—Dec., 1906. No. 81775 E.

The Voyage of the Dewey. F. M. Bennett. An account of the fitting out and of the seafaring mishaps, accidents and obstacles met with, and expedients resorted to by the naval expedition that transferred the floating dry dock Dewey from Chesapeake Bay to the Philippine Islands. Ills. 20500 w. Pro of the U S Nav Inst—Dec., 1906. No. 81673 F.

The Cavite Dry Dock at Sea. F. M. Bennett. Describes briefly some of the engineering problems that arose while the dock was in transit from the United States to the Philippine Islands. Ills. 5500 w. Jour Am Soc of Nav Engrs—Feb., 1907. No. 83769 H.

Floating Dry Dock No. IV at Rotterdam (Das Rotterdamer Schwimmdock IV). An illustrated detailed description of construction and operation. 2000 w. Elektrotech u Polytech Rundschau—May 1, 1907. No. 84950 D.

Middlesbrough Docks. W. G. Kyle. An illustrated account of what has been achieved in the reconstruction of these docks, which are practically completed. 2500 w. Ir & Coal Trds Rev—Jan. 18, 1907. No. 82003 A.

Floating Dock for Trinidad. Gives 2-page plate and other illustrations, with description of this self-docking floating dock. 700 w. Engng—July 26, 1907. No. 86178 A.

### Electricity

The Naval Floating Dock—Its Advantages, Design and Construction. Discussion of the paper by Leonard M. Cox. 5000 w. Pro Am Soc of Civ Engrs—Dec., 1906. No. 81302 E.

Steady-Floating Marine Structures. Illustrated description of the device invented by William Edward Murray which may modify the construction of breakwaters and other marine structures. Also editorial. 2500 w. Am Shipbldr—Dec. 8, 1906. No. 80906.

Elderslie Graving-Dock. William Park Weir. Cross-sections and description of the construction of this dock on the River Clyde. 1200 w. Inst of Civ Engrs—No. 3639. No. 84464 N.

The Tredegar Dry Dock, Newport, Monmouth. Sigismund Alfred Frech. Illustrated description of the construction, and the methods adopted to overcome the difficulties encountered. 5000 w. Inst of Civ Engrs—No. 3646. No. 84463 N.

Two Timber Drydocks and Their Pumping Plant. F. P. Palen and G. L. Smith. Illustrates and describes the two timber drydocks at Newport News, Va., and their pumping plant. 3000 w. Naut Gaz—Dec. 27, 1906. No. 81318.

New Dry Dock at Lorain. Improvements and extensions at the works of the American Shipbuilding Co. are illustrated and described. 1100 w. Marine Rev—March 7, 1907. No. 82813.

Opening of the Large Dry-Dock at League Island. Illustration, with brief description of this dry-dock near Philadelphia. 500 w. Sci Am—Aug. 24, 1907. No. 86515.

Present and Prospective Docking Facilities of the Pacific Coast. H. A. Crafts. Brief account of present facilities, and of the large drydock soon to be constructed at Hunter's Point. 1200 w. Sci Am—Aug. 3, 1907. No. 86606.

Torpedo Boat Docks at the Kiel Imperial Ship Yard. Dr. Alfred Gradenwitz. Illustrated description of an interesting floating dock plant recently constructed for the docking of torpedo boats. 1200 w. Int Marine Engng—March, 1907. No. 82664 C.

The Railway Type of Dry Dock. James L. Crandall. An illustrated article discussing the essential features of a good dry dock, and presenting the advantages of the railway types. 2500 w. Int Marine Engng—April, 1907. No. 83344 C.

See also Electric Pumping, under MARINE AND NAVAL ENGINEERING.

### Electricity.

Electrical Installations of the United



## MARINE AND NAVAL ENGINEERING

### Electricity

States Navy. Burns T. Walling and Julius Martin. A manual of the latest approved material, including its use, operation, inspection, care, and management, and method of installation on board ships. Ills. 51800 w. Pro U S Nav Inst—Dec., 1906. Serial. 1st part. No. 81674 F.

Electricity on Board Ship. Sydney F. Walker. First of a series of articles describing apparatus used, explaining the principles of the construction, and arrangement of cables, different forms of wireless telegraphic apparatus, etc. 4500 w. Marine Rev—Aug. 1, 1907. Serial. 1st part. No. 86123.

The Application of Electricity to Naval Service (Le Applicazioni dell' Eletticità ai Servizi Navali). E. Simion. A general review of the subject. 30000 w. Rivista Marittima—Feb., 1907. No. 82978 E + F.

The Present Status of Electricity on Shipboard (Ueber den Heutigen Stand der Schiffselektrotechnik). C. Schulthes. Describes the various applications of electricity on shipboard, illustrating plants, distribution systems, etc. 2000 w. Serial. 1st part. Elektrotech Zeitschr—Aug. 1, 1907. No. 86989 D.

See also Mauretania, under MARINE AND NAVAL ENGINEERING.

### Electric Pumping.

The Application of Electricity to the Driving of Pumping Machinery for Pontoon and Graving Docks. W. C. Mountain. Gives examples of docks driven both by steam and electricity, giving the principal data as regards dimensions, pumping machinery, and the cost of pumping per ton docked. Discussion. Ills. 5500 w. Trans N-E Coast Inst of Engrs & Shipbldr—June, 1907. No. 85823 N.

### Engine Bearings.

Difficulties Experienced with the Main Engine Bearings on Some of Our Latest Vessels. A. F. H. Yates. Gives data collected in the case of five vessels. 9000 w. Jour Am Soc of Nav Engrs—Aug., 1907. No. 87764 H.

### Engines.

High-Speed Two-Stroke Engines, with Remarks on Internal Water Cooling. T. D. Kelly. Gives descriptions and diagrams showing the evolution of the Duplex two-stroke engine, describing also some improvements which will probably be adopted for large powered marine work. 2800 w. Prac Engr—July 19, 1907. Serial. 1st part. No. 85983 A.

See also Combustion Motors, Gas Engines, Indicator Cards and Lubrication, under MARINE AND NAVAL EN-

GINEERING; Gas Engine and Oil Engines, under MECHANICAL ENGINEERING, COMBUSTION MOTORS; and Engines, under MECHANICAL ENGINEERING, STEAM ENGINEERING.

### Exhibition.

The International Naval Exhibition at Bordeaux, 1907 (Die Internationale Schifffahrtsausstellung in Bordeaux, 1907). W. Kaemmerer. The first part describes the grounds and buildings and commences a description of the exhibits. Ills. 2000 w. Serial. 1st part. Zeitschr d Ver Deutscher Ing—July 13, 1907. No. 86272 D.

### Feed Water.

Sea Water and the Use of the Salinometer. Jas. Shirra. Abstract of a paper read before the Inst. of Marine Engrs. Explains the difference between "density" and "salinity," and the objections to the use of sea water for feeding marine boilers. 2000 w. Mech Engr—Aug. 17, 1907. No. 86588 A.

### Ferries.

Ferry-Steamers for the Hooghly. Illustrations and description of the engines fitted into one of seven twin-screw ferry steamers for the Port of Calcutta. Brief description of the vessels also. 700 w. Engng—Feb. 1, 1907. No. 82254 A.

The Car Ferry Traffic of Lake Erie. W. Frank McClure. Illustrates and describes the service between Ohio and Canadian harbors, especially the transport of coal in winter. Shows various types of vessels. 1300 w. Sci Am—Feb. 16, 1907. No. 82422.

Train-Ferry Steamer "Lucia Carbo" for the Entre Rios Railway. Illustrated description of a steamer designed to convey trains about 50 miles on the River Plate, South America. 500 w. Engng—Sept. 6, 1907. No. 87078 A.

The Fireproof Ferry Boat. F. L. Du Bosque. Read before the Soc. of Nav. Archts. & Marine Engrs. Considers some of the causes of fire in ferry-boats and the precautions taken, and gives an illustrated description of the Hammerton, which will be used between Camden and Philadelphia. 2000 w. Naut Gaz—Nov. 22, 1906. No. 80582.

Construction of a Fireproof Ferry Steamer. William Gatewood. Read before the Soc. of Naval Archts. & Marine Engrs. An illustrated article giving particulars of an adaptation of fireproof construction in the building of the Jamestown, an excursion steamer for the Potomac river. Discussion. 7500 w. Marine Rev—Dec. 6, 1906. No. 80876.

New Ferryboats for City of New York.

### Ferries

## MARINE AND NAVAL ENGINEERING

### Fire Prevention

Illustrated detailed description of the new screw ferryboat "Bay Ridge," the latest addition to the municipal ferryboats. 1500 w. Naut Gaz—July 25, 1907. No. 85900.

The Long Island Ferryboat Hempstead. Illustrated description of one of two new ferryboats recently placed in service between 34th St., New York, and Long Island City. 1000 w. Int Marine Engng—Aug., 1907. No. 85907 C.

### Fire Prevention.

The Causes and Prevention of Fire at Sea. Prof. Vivian B. Lewes. Read before the Inst. of Naval Archts. Considers the causes of fires at sea, the safeguards, and means of extinction. 6000 w. Engng—April 5, 1907. No. 83746 A.

The Clayton Apparatus (Der Clayton Apparat). F. Heintzenberg. Illustrates and describes this system of fire-protection on shipboard. The SO<sub>2</sub> generator and the method of installation and use. 3800 w. Serial. 1st part. Schiffbau—Aug. 28, 1907. No. 86956 D.

### Firing.

The Advantages of a Systematic and Regular Method of Working the Fires in a Boiler. R. K. Crank. Remarks on the advantages observed on two trial trips of ships, and gives suggestions for use on vessels where no automatic signals for working fires have been fitted. 1300 w. Jour Am Soc of Nav Engrs—Feb., 1907. No. 83772 H.

### Fishing Vessel.

The Oil-Motor Herring-Drifter "Thankful." Illustrated description of a fishing-vessel, fitted with an oil-engine rated at 82 indicated horse-power. 1500 w. Engng—July 5, 1907. No. 85593 A.

### Fleet Telephony.

See Telephony, under ELECTRICAL ENGINEERING, COMMUNICATION.

### Fog.

The Artificial Dispersion of Fog (De la Dispersion Artificielle du Brouillard). M. Dibos. Discusses the nature and causes of fog and describes the researches of the author on its artificial dispersion, his apparatus, results, etc. Ill. 5000 w. Mem d l Soc d Ing Civ d France—March, 1907. No. 84105 G.

### Gas Engines.

Tendencies and Improvements in Marine Gas-Engine Construction. Howard Greene. Calls attention to progress and gives illustrated descriptions of recent engines modelled on an approach to steam-engine design. 3000 w. Engineering Magazine—April, 1907. No. 83314 B.

### Gyroscope

The Gas Engine for Heavy Marine Service. Lewis Nixon. Gives reasons for its adoption, and a short résumé of what has been done and the outlook. 1200 w. Engineering Magazine—May, 1907. No. 83933 B.

The Present Status of Marine Gas Engineering. Peter Eyermann. Deals with the internal-combustion engine as at present used in all kinds of services on salt water as well as on fresh-water vessels. Ills. 6500 w. Jour Am Soc of Nav Engrs—Aug., 1907. No. 87762 H.

Marine Gas Propulsion in Relation to Imperial Commerce and Defence. A. Vennell Coster. Discusses the relative merits of gas reciprocating engines, steam turbines, and steam reciprocating engines for marine purposes, and explains a safe scheme of marine gas propulsion. Ills. 4500 w. Engr, Lond—Feb. 15, 1907. No. 82613 A.

See also Combustion Motors, under MARINE AND NAVAL ENGINEERING.

### German Navy.

The Real Facts About the German Navy. Archibald S. Hurd. An illustrated article giving a comparison between the naval strength of Germany and Great Britain. 5400 w. Cassier's Mag—March, 1907. No. 83026 B.

### Gun Mounts.

Comparative Trials of Elevating Gears for Rapid-Fire Gun Mounts. John F. Meigs. An illustrated account of trials. 1500 w. Jour Am Soc of Nav Engrs—Aug., 1907. No. 87763 H.

### Gyroscope.

The Gyroscope as a Compass. A Frederick Collins. Illustrates and describes the Auschütz gyroscope, designed for the purpose of supplementing the ship's compass. 1100 w. Sci Am—April 6, 1907. No. 83460.

Experiments with the Marine Gyroscope (Versuche mit dem Schiffskreis). O. Schlick. Description of experiments with a large gyroscope for diminishing the rolling of ships, made on board the "Seebär," a former torpedo boat, in the summer of 1906. Excellent results were obtained. Ill. 3000 w. Zeitschr d Ver Deutscher Ing—Dec. 1, 1906. No. 81149 D.

Practical Tests of the Gyrostat for Ships. Otto Schlick. An account of a test made of this device to diminish the rolling of ships, which gives reasons for believing it can be successfully applied. Ills. 2300 w. Sci Am Sup—Jan. 26, 1907. No. 81932.

## MARINE AND NAVAL ENGINEERING

### Historical

**Gyroscopic Steadying Apparatus.** Sir William H. White. Read before the Inst. of Naval Archts. Gives a summary of results obtained with Dr. Otto Schlick's gyroscopic apparatus for steadying ships, and of the conclusions. Ills. 4500 w. Engng—April 5, 1907. No. 83743 A.

**Practical Tests of the Schlick Gyrostat for Ships.** Illustrated description of this apparatus for diminishing the rolling of ships, and of tests made. 1700 w. Sci Am—June 15, 1907. No. 85015.

### Historical.

**A Century of Steamship Construction (Hundert Jahre Dampfschiffahrt).** Conrad Matschoss. A review of steam navigation from Robert Fulton to the present day. Ills. 6000 w. Zeitschr d Ver Deutscher Ing—Aug. 17, 1907. No. 86683 D.

**Early History of Steam Navigation.** An illustrated article reviewing the early history of navigation, especially since the application of steam to the propulsion of vessels. 3500 w. Rudder—May, 1907. Serial. 1st part. No. 84263 C.

**Robert Fulton and the Centenary of Steam Navigation.** A brief account of the events that led to the development and circumstances connected with it. Ills. 2200 w. Engr, Lond—Aug. 16, 1907. No. 86602 A.

**Fulton in France.** Henry Harrison Suplee. An interesting illustrated account of Fulton's life in France, from 1797 to 1806, and his experiments with submarines and steamboats. 5500 w. Cassier's Mag—Sept., 1907. No. 86614 B.

**William Symington and the Beginnings of Steam Navigation.** Robert Cochrane. An illustrated account of his work in the early development of steam navigation. 5500 w. Cassier's Mag—Oct., 1907. No. 87390 B.

### Hydroplane Boats.

**Recent Performances of French Hydroplane Boats.** An illustrated account of the remarkable performance of hydroplane gliding boats in the vicinity of Paris, describing details of interest. 2500 w. Sci Am. Feb. 23, 1907. No. 82572.

**A Twelve-Foot Gliding Boat.** Alfred E. Luders. Illustrates and describes a small hydroplane that may be built by an amateur. 3500 w. Rudder—June, 1907. No. 84731 C.

**How to Build a Hydroplane Gliding Boat.** William and Walter Stearns. Drawings and full directions. 1000 w. Sci Am Sup—June 15, 1907. No. 85016.

**A Practical Gliding Craft with Submerged Hydroplanes.** Illustrations, with

### Life-Saving

description of a new gliding craft invented by Peter Cooper Hewitt. 2500 w. Sci Am—Aug. 3, 1907. No. 86061.

**The Crocco and Ricaldoni Hydroplane Boat.** Illustrations, with brief description. 500 w. Engng—Oct. 4, 1907. No. 87593 A.

### Ice Breaking.

**Combined Ice-Breaking, Salvage, and Survey Steamer for the Canadian Government.** Illustrated description of the "Lady Grey," a steamer for service on the St. Lawrence River, for the purpose of maintaining an open channel to the sea during the winter. 6000 w. Sci Am Sup—Jan. 26, 1907. No. 81930.

**Ice Breaking Steamer for the St. Lawrence.** Illustration, with brief description of the "Lady Grey," a vessel built for the Canadian Government. 700 w. Marine Rev—Nov. 15, 1906. No. 80427.

### Indicator Cards.

**Combined Indicator Cards.** Charles S. Linch. Gives cards from every-day running of the City of Chester, and the Mohican, with particulars of the vessels. 1600 w. Int Marine Engng—Sept., 1907. Serial. 1st part. No. 86574 C.

### Inland Navigation.

**Improvements Required in Inland Navigation.** Henry Rodolph de Salis. Read before the Inst. of Min. Engrs. A discussion of the inland waterways of England and Wales. 3000 w. Ir & Coal Trds Rev—June 14, 1907. No. 85256 A.

### Labrador Boats.

**Eskimo and Indian Boats of Labrador.** Stephen P. M. Tasker. Brief description of types of boats used along the coasts of Labrador, which differ but slightly from those used hundreds of years ago. 900 w. Int Marine Engng—June, 1907. No. 84660 C.

### Lifeboat.

**An Unsinkable Motor Lifeboat.** L. Ramakers. Illustrated description of the "Michael Henry," built by John I. Thornycroft & Co., with report of tests. 500 w. Sci Am—April 6, 1907. No. 83461.

### Life-Saving.

**The Apparatus for the United States Life-Saving Service.** Waldon Fawcett. Illustrates and describes devices found useful in this service. 1400 w. Sci Am—Dec. 29, 1906. No. 81294.

**United States Revenue Cutter No. 16.** Drawings and particulars of a new single screw steel cutter for life-saving service on the North Pacific Coast of the United

## MARINE AND NAVAL ENGINEERING

### Lighthouses

States. 4000 w. Int Marine Engng—Feb., 1907. No. 81761 C.

### Lighthouses.

The Racine Reef Lighthouse and Fog Signal in Lake Michigan. Illustrated description of this lighthouse and its construction. 1500 w. Eng Rec—March 23, 1907. No. 83217.

Cape Race Lighthouse. Illustrates and describes a new tower of reinforced concrete, cylindrical in form, and higher than the existing structure, about to be erected on the coast of Newfoundland; also the optical apparatus which is of the highest power. 2000 w. Engr, Lond—May 3, 1907. No. 84345 A.

Armored Concrete Lighthouse at La Coubre, France. Illustrates and describes the construction of one of the highest light-towers in the world under difficult circumstances, in the short period of nine months. 1600 w. Engr, Lond—April 5, 1907. No. 83747 A.

Some New German Lighthouses. Illustrated descriptions of recent types showing the great improvements. 700 w. Engr, Lond—June 8, 1907. No. 85504 A.

### Lubrication.

How a Barrel of Olive Oil Saved the Staff of the Navy; An Incident in American Naval History. F. P. Albert. An interesting account relating to the professional work of Com. B. F. Isherwood, and, particularly, the story of the use of olive oil for lubricating journals of the "Wampanoag." 4500 w. Eng News—Dec. 27, 1906. No. 81286.

See also same title, under MECHANICAL ENGINEERING, STEAM ENGINEERING.

### Lusitania.

The Cunard Liner "Lusitania." W. J. Luke. Read before the Inst. of Naval Archts. On some points of interest in connection with the design, building and launching of the "Lusitania." 6000 w. Engng—March 29, 1907. No. 83555 A.

The Cunard Turbine-Driven Quadruple-Screw Atlantic Liner "Lusitania." A brief review of the progress of marine construction as applied to Atlantic steamships, with full illustrated detailed description of this vessel, and much information relating to its construction and equipment. Also editorial. 35000 w. 9 plates. Engng—Aug. 2, 1907. No. 86364 A.

The Saloons of the "Lusitania." Gives an 8-page supplement of engravings, with description of the artistic furnishings and decorations. 3000 w. Engng—July 19, 1907. No. 85992 A.

### Milan Congress

The 25-Knot Turbine Liner "Lusitania." Illustrations with brief description of this new liner. 1200 w. Sci Am—Aug. 10, 1907. No. 86301.

The New Turbine Liner "Lusitania." Illustrations, with information of interest in regard to this and other fast vessels. 2000 w. Sci Am—Sept. 14, 1907. No. 86896.

### Magnetism.

On Some Experiments on the Magnetic Character of Vessels. Capt. W. Bartling. Read before the N. E. Coast Inst. of Engrs. and Shipbldrs. A report of observations made to obtain actual quantitative measurements of the effect of various influences on the standard compass. 1400 w. Elec Engr, Lond—May 31, 1907. No. 84880 A.

The Effect of Current Sheets on the Compass Needle on Board Iron Ships. C. Arldt. Trans. from *Elektrotechnische Zeitschrift*. A theoretical and experimental investigation. 1000 w. Elec Rev, Lond—May 31, 1907. No. 84881 A.

Polar Diagrams of Magnetic Deviation (Diagramma Polare Delle Deviazioni Magnetiche). E. Ippolito. Method of using a polar diagram for magnetic deviation to shorten navigation calculations. Diagrams and tables. 2900 w. Rivista Marittima—Dec., 1906. No. 82900 E + F.

See also Compass Variation, under ELECTRICAL ENGINEERING, ELECTRO-PHYSICS.

### Mauretania.

The Electrical Equipment of the SS. "Mauretania." In this issue the system of power distribution, electrical generating plant, fans, motors for dismantling the turbines, cranes, lifts, etc., are described. 3000 w. Elect'n, Lond—Sept. 27, 1907. Serial. 1st part. No. 87515 A.

The 25¼-Knot Cunard Liner "Mauretania." Illustrated description of this new turbine vessel, and matters relating to its equipment. 1500 w. Sci Am—Nov. 3, 1906. No. 80185.

The Motive Power of a 25¼-Knot Liner. An interesting illustration and explanation representing the horse-power necessary to drive the new Cunard liners. 1500 w. Sci Am—Dec. 15, 1906. No. 80974.

### Milan Congress.

The Milan Navigation Congress of 1905; and Italian Navigation Works and Ports Visited. Leveson Francis Vernon-Harcourt. An account on the visits to works at the conclusion of the proceedings at Milan. 13500 w. 2 plates. Inst of Civ Engrs—No. 3621. No. 82034 N.

## MARINE AND NAVAL ENGINEERING

### Model Basins

#### Model Basins.

The Uebigau Experiment Station (Die Versuchsanstalt "Uebigau"). Fr. Gebers. Illustrated description of large model basin and testing plant for ships' models, propellers, etc., near Dresden, Saxony. 3 plates. Serial. 2 parts. 4500 w. Schiffbau—Oct. 10 and 24, 1906. No. 81116 each D.

Ship Model Stations. Cecil H. Peabody. Gives a general statement of the methods of testing models, and describes three governmental and three private stations visited. 6500 w. Tech Qr—Dec., 1906. No. 81774 E.

A Brief Description of the Functions and Operation of an Experimental Model Basin. R. H. M. Robinson. Ills. 5000 w. Pro U S Naval Inst—Sept., 1907. No. 87757 F.

#### Models.

The Model-Maker of Maiden Lane. Illustrates some fine marine models and other work executed at a shop in New York City. 1600 w. Am Mach—Vol. 30. No. 6. No. 82167.

#### Motor Boats.

Motor Boats at the Berlin and Paris Shows (Motorboote auf den Ausstellungen in Berlin und Paris). Auto Nautikus. Description of boats with particulars of the engines. Illus. 4600 w. Zeitschr des Mit Motorwagen Ver—No. 2, Jan., 1907. No. 83602 D.

The Motor Boat Show at Madison Square Garden. A. E. Potter. Review of the exhibits at this exhibition in New York City. 2000 w. Sci Am—March 2, 1907. No. 82643.

The Fourth Annual Motor Boat Exhibition and Races at Monaco. An account of these races with illustrations of some of the fast and novel boats. 2000 w. Sci Am Sup—May 11, 1907. No. 84328.

The Kiel Motor Boat Exhibition (Die Kieler Motorboot-Ausstellung). A brief general description of the exhibits. 2000 w. Schiffbau—Aug. 14, 1907. No. 86954 D.

The Development of Motor-Boat Construction with some Examples of the Applications of the Motor Boat in Naval Service (Die Entwicklung des Motorbootbaues mit besonderer Berücksichtigung der Verwendung von Motorbooten in der Kriegsmarine). W. Kaemmerer. Ills. 3000 w. Zeitschr d Ver Deutscher Ing—June 22, 1907. No. 85680 D.

Marine Oil Engine for Commercial Purposes. A. F. Evans. Abstract of a paper

### Naval Efficiency

read before the British Motor Boat Club, upon the underlying principles of the motor boat in commerce. 1700 w. Auto Jour—Feb. 9, 1907. No. 82450 A.

Influence of the Automobile on Launch Development. W. P. Stephens. Notes on recent development, describing some of the types and the improvements in engine design. 1500 w. Sci Am—Feb. 23, 1907. No. 82574.

Latest Types of Cruising Power Boats. Illustrated description of recent types, with editorial on the trend of motor-boat development. 2700 w. Sci Am—Feb. 23, 1907. No. 82573.

"Britannia I." Brief illustrated description of Sir Thomas Lipton's motor boat. 400 w. Auto Jour—Jan. 19, 1907. No. 81974 A.

A New Automobile Boat. Jaques Boyer. Brief illustrated description of a self-propelled vehicle, devised by J. Ravallier, which can navigate in water or travel overland. 500 w. Sci Am—July 20, 1907. No. 85741.

The "Typhonoid"—A New Type of Motor Boat. M. J. Peltier. Illustrates and describes a new racing boat recently launched at a French shipyard. The invention of M. André Gambin. 500 w. Sci Am—Aug. 24, 1907. No. 86517.

Motor-Boat Propellers. G. R. McDermott. Presents formulæ for use in the motor-boat field, with explanatory notes. 1800 w. Sib Jour of Engng—May, 1907. No. 84557 C.

See also Torpedo Boats, under MARINE AND NAVAL ENGINEERING.

#### Naval Architecture.

The Dimensions, Proportions, and Forms of Ships. H. B. Donaldson. A discussion of the effect of different proportions on stability and the effect of consumable stores, and other conditions that may arise during service. Ills. 3000 w. Int Marine Engng—March, 1907. No. 82663 C.

Notes on Naval Science Topics. Arthur R. Liddell. Comments of some of the problems in the designing and working of ships, such as proportions, freeboard, etc. 3000 w. Int Marine Engng—Aug., 1907. No. 85911 C.

#### Naval Efficiency.

Personnel—A Vital Factor in Naval Efficiency. Walter M. McFarland. An introduction to a paper, by Commander Worthington, on naval education and the training given at the U. S. Naval Academy at Annapolis. 1000 w. Engineering Magazine—March, 1907. No. 82632 B.

## MARINE AND NAVAL ENGINEERING

### Navy Yards

#### Navy Yards.

The Position and Equipment of the Puget Sound Navy Yard. H. Cole Estep. A study of American naval interests on the Pacific, especially the location and equipment of dry-docks. Ills. 1500 w. Engineering Magazine—Aug., 1907. No. 85918 B.

#### Ore Shipment.

The Transportation and Shipment of Ore. Introductory remarks on methods of handling iron and copper ores in Spain, with an illustrated detailed description of the storage and shipment arrangements at Almeria, Spain. 3000 w. Engng—Jan. 25, 1907. Serial. 1st part. No. 82152 A.

#### Pallograph.

The Electric Pallograph. Illustrated description of an instrument, designed by Otto Schlick, for measuring and registering the vibrations of steamships. 1300 w. Prac Eng—Aug. 16, 1907. No. 86584 A.

#### Propellers.

New Aspects of the Design and Construction of Screw Propellers (Neuere Gesichtspunkte für die Konstruktion und den Entwurf von Schiffschrauben). A. Ackenbach. Illustrated discussion of various new propellers. 1500 w. Zeitschr d Ver Deutscher Ing—Dec. 1, 1906. No. 81154 D.

A Comparison of Durand's and Curtis and Hewins' Propeller Experiments of 1905. Read before the Soc. of Nav. Archts. & Marine Engrs. Compares data given in papers by writers named. 600 w. Int Marine Engng—Jan., 1907. No. 81221 C.

Experiments with Ship Propellers (Vergleichsversuche an Schiffschrauben). H. Lorenz. Mathematical treatment. Diagrams and tables. 2200 w. Zeitschr d Vereines Deutscher Ingenieure—Jan. 5, 1907. No. 82355 D.

Propeller Struts. George Simpson. Read before the Inst. of Naval Archts. Paper aiming to induce a discussion on a semi-empirical formula, whose function is the determination of suitable dimensions for strut-arms by a definite method. 1500 w. Engng—April 5, 1907. No. 83745 A.

Torque of Propeller Shafting. J. Hamilton Gibson. Read before the Inst. of Naval Archts. Investigations and results of applying the torsion meter to propeller-shafting. 3000 w. Engng—April 12, 1907. No. 83882 A.

Torque of Propeller Shafting. J. Hamilton Gibson. Investigations and results.

### Racing Boats

Diagrams. 2800 w. Jour Am Soc of Nav Engrs—May, 1907. No. 85766 H.

Effect of Number of Revolutions and Working Efficiency of Ships' Screws on the Speed (Die Aenderung der Umlaufzahl und des Wirkungsgrades von Schiffschrauben mit der Fahrgeschwindigkeit). H. Lorenz. Mathematical treatment, diagrams. 2700 w. Zeitschr d Ver Deutscher Ingenieure—March 2, 1907. No. 83608 D.

Note on the Cavitation of Screw-Propellers. Sydney Walker Barnaby. Remarks on recent experiments and the methods of avoiding cavitation. Also gives tables and formulae. 2000 w. Inst of Civ Engrs.—No. 3632. No. 80546 N.

On the Propulsive Power of Screws Necessary to Avoid Cavitation. Jacques Augustin Normand. Consideration of this subject, giving calculations to determine the necessary propulsive power of screws. 1200 w. Inst of Civ Engrs—No. 3600. No. 80538 N.

The Deformation of Propeller-Blades. William Burlingham. Discusses the best shape of section for a high-speed propeller-blade. Ills. 3000 w. Engng—March 1, 1907. No. 82897 A.

Screw Propellers. T. Sidney Cockrill. Read before the Liverpool Engng. Soc. Considers the general features of screw propulsion and propeller design. 6500 w. Marine Rev—May 2, 1907. No. 84089.

See also Motor Boats, under MARINE AND NAVAL ENGINEERING.

#### Propulsion.

The Del Proposto System of Electrical Transmission Gear for the Propulsion of Ships by Irreversible Engines. Describes an electrical method of power transmission in connection with the use of irreversible internal combustion engines for the propulsion of ships. 900 w. Sci Am Sup—June 22, 1907. No. 85164.

The Propulsion of Ships by Means of Non-reversible Engines. Drawings and description, from *Rivista Marittima*, of vessels employing non-reversible engines, using four direct propulsion electric motors actuated by current from generators operated by the engines. 2300 w. Int Marine Engng—Sept., 1907. No. 86578 C.

A New Method of Ship Propulsion (Een Nieuwe Wijze van Voortbeweging voor Stoomschepen). A. G. Bosman. Illustrates and describes a method of steamship propulsion by means of an endless chain of traveling buckets. 3000 w. De Ingenieur—May 18, 1907. No. 84991 D.

#### Racing Boat.

New Racing Launch. Illustration, with description, of a racing launch of the tor-

## MARINE AND NAVAL ENGINEERING

### Refrigeration

pedo boat type designed by André Gambin. 900 w. Engr, Lond—Sept. 6, 1907. No. 87086 A.

### Refrigeration.

See same title, under MECHANICAL ENGINEERING, HEATING AND COOLING.

### Repairs.

Temporary Repairs to Steamer Damaged Abroad. Illustrates and describes temporary repairs made to a ship while off the coast of South America, and nearly 800 miles from the nearest drydock. 1000 w. Prac Engr—July 19, 1907. No. 85982 A.

The Damage to the Steamer Martha Woermann (Die Havarie des Hamburger Dampfers "Martha Woermann"). Hugo Buchholz. Description of rapid work in repairing a broken rudder and stern post. Illus. 2400 w. Zeitschr d Vereines Deutscher Ingenieure—Jan. 19, 1907. No. 82360 D.

### Research Boat.

The German Marine Research Boat "Planet." Herrmann Albrecht. Brief illustrated description of this vessel and some of the instruments and methods of work to be used, outlining the character of the researches to be made. 700 w. Sci Am—Dec. 22, 1906. No. 81084.

### Resistance.

The Resistance of Ships. A. W. Johns. Read before the Inst. of Naval Archts. Considers some of the approximate formulæ for determining the resistance of ships, showing comparisons of the results given by them and those obtained by experiments on models. 3000 w. Engng—April 26, 1907. No. 84257 A.

Suggested Method for Experiments on the Wind Resistance of Ships. F. H. Alexander. Suggests a comparatively inexpensive method whereby some experiments might be carried out to increase the knowledge of the effect of wind's resistance on the vessel's speed. Plates. Also discussion. 3000 w. Trans N-E Coast Inst of Engrs & Shipbldrs—March, 1907. No. 83701 N.

### Revenue Cutters.

Revenue Cutter Pamlico. Illustrates a vessel for the North Carolina sounds, recently put in service. Also gives a brief account of the U. S. revenue cutter service. 3500 w. Naut Gaz—Aug. 22, 1907. No. 86564.

U. S. Revenue Cutter Itasca. Charles S. Root. Describes the U. S. S. Bancroft and its rebuilding and refitting for training cadets of the line and the engineer corps. Ills. 2800 w. Jour Am Soc of Nav Engrs—Aug., 1907. No. 87765 H.

### Salving

#### Rudder.

A Combined Double Rudder and Steering Gear. An illustrated description of this device, invented by E. Smethurst. 700 w. Engr, Lond—Oct. 26, 1906. No. 80312 A.

#### Safety at Sea.

Electric Safeguards at Sea. A. S. Atkinson. On the electric appliances introduced on modern ships, especially their bearing on fire risks. 2500 w. Int Marine Engng—Aug., 1907. No. 85906 C.

Absolute Safety at Sea. Joseph R. Oldham. Describes a 1200-ft., 170,000 h. p. steamship which the writer believes will give absolute safety at sea, and he believes will be built within 25 years. 2500 w. Cassier's Mag—Nov., 1906. No. 80208 B.

#### Sailing Vessels.

The Passing of American Square-Rigged Vessels. James G. McCurdy. Remarks on the rapid disappearance of this type of vessel, and the conditions causing it. Ill. 1500 w. Sci Am Sup—Feb. 16, 1907. No. 82423.

The Passing of American Square-Rigged Vessels. Discusses the causes that have led to the disappearance of this class of sailing vessels. Ills. 1500 w. Sci Am—March 9, 1907. No. 82807.

#### Salving.

The Salving of the Guns of H. M. S. "Montagu." An illustrated account of very interesting work in connection with the saving of the ordnance of this stranded ship. 3000 w. Engng—Nov. 9, 1906. No. 80493 A.

The Raising of the Bavarian. A description, with illustrations, of the first use of compressed air in raising stranded vessels, in the case of the 12,000 ton Allan Liner which ran on the Wye Rock, near Quebec, on the night of Nov. 3, 1905. 1800 w. Compressed Air—Jan., 1907. No. 81789.

How Compressed Air Raised a Sunken Ship. The Remarkable Salving of the Steamship "Bavarian." Illustrates and describes methods used in raising this vessel which was stranded near Quebec. 600 w. Sci Am—March 23, 1907. No. 83150.

The Salving of the Suevic. An illustrated account of the notable salving of this vessel, which was wrecked on the rocks off Lizard Point. 2700 w. Engr, Lond—April 12, 1907. No. 83886 A.

The Salving of the "Suevic." A. G. Hood. Illustrated description of a difficult engineering feat. 1300 w. R R Gaz—June 28, 1907. No. 85336.

Repairing the Suevic. Illustrated de-

## MARINE AND NAVAL ENGINEERING

### Salving

scription of the bow for this White Star liner which was wrecked on a reef off the Lizard. 800 w. Engr, Lond—Sept. 27, 1907. No. 87529 A.

Notes on Raising the Gunboat Machias. Illustrates and describes methods of raising this steel gunboat which was sunk during a hurricane. 700 w. Int Marine Engng—July, 1907. No. 85352 C.

A Study of Some Processes and Methods of Salving and Refloating Submarines (Etude de quelques Procédés et Méthodes de Sauvetage et de Renflouage des Navires Sous-Marines). M. Dibos. Considers the difficulties and dangers of submarine navigation, and the salving methods employed. 12000 w. Mem Soc Ing Civ de France—July, 1907. No. 86910 G.

### Schooner.

The Auxiliary Coasting Schooner Northland. Describes the vessel, said to be the largest motor schooner in the world, and the gasoline engines. 1500 w. Int Marine Engng—Sept., 1907. No. 86575 C.

### Sea-Rafts.

The Sea-Rafts of the North-West. Day Allen Willey. An illustrated article showing the enormous dimensions and general construction of these timber rafts. 1200 w. Sci Am—Feb. 2, 1907. No. 82085.

### Sectional Construction.

Sectional Work in Ship Construction. J. L. Twaddell. Remarks on the changed conditions in industrial engineering which have caused the subdivision of work and the greater use of machinery. General discussion. 3500 w. Trans N-E Coast Inst of Engrs & Shipbldrs—July, 1907. No. 86491 N.

### Shipbuilding.

Shipbuilding and Marine Engineering During 1906. A review of the work accomplished showing the great magnitude and discussing the interesting features and progress. 2000 w. Engr, Lond—Jan. 18, 1907. Serial. 1st part. No. 81993 A.

The World's Shipbuilding in 1906. Gives tables showing the tonnage of vessels launched during the years 1892-1906, with remarks on the output of the last year, and related matters. 2000 w. Engng—Feb. 1, 1907. No. 82255 A.

Extensions at Elswick and Openshaw. Describes important schemes in progress for the extension and improvement of the works and shipyards. 1500 w. Engr, Lond—Jan. 4, 1907. No. 81662 A.

Newport News Great Shipbuilding

### Signaling

Plant. William H. Stone. Information concerning the desirable location and excellent equipment of this plant. Ills. 2000 w. Mfrs' Rec—May 9, 1907. No. 84262.

The Moran Company. H. Cole Estep. Illustrated description and history of this Pacific Coast ship building plant. 2000 w. Marine Rev—Oct. 3, 1907. No. 87436.

Visits to European Navy Yards and Shipyards During the Summer of 1906. Cecil H. Peabody. Describes visits to six navy yards and thirteen private yards, giving plans. 12000 w. Tech Qr—March, 1907. No. 84471 E.

Glimpses into Some German Shipyards. Harold A. Everett. Brief illustrated descriptions of the Vulcan yard, and the Howaldtswerke, are given in the present number. 2000 w. Int Marine Engng—July, 1907. Serial. 1st part. No. 85353 C.

The Société des Chantiers et Ateliers de la Gironde. Plans and description of this shipbuilding yard almost opposite the Bordeaux commercial docks. 1500 w. Engng—June 21, 1907. No. 85398 A.

The Werf Gusto of A. F. Smulders in Holland. Frank C. Perkins. Illustrated description of this shipbuilding yard. 1500 w. Int Marine Engng—Sept., 1907. No. 86577 C.

### Signaling.

Submarine Signalling by Means of Sound. An illustrated review of the development of submarine signalling, describing the application at Liverpool. The method consists essentially of a bell as a transmitter, and a tank containing a solution and a microphone as a receiver. 2000 w. Elect'n, Lond—Jan. 25, 1907. No. 82143 A.

Submarine Signaling. Henry R. Gilson. An illustrated review of the development and the applications made. 2000 w. Elec Rev, N.Y.—March 30, 1907. No. 83349.

Finding Direction by Means of Submarine Sound Signals. Lucien J. Blake. A mathematical analysis of the sound waves received to determine whether the vessel casts a sound-shadow or not. 1700 w. Elec Wld—April 13, 1907. No. 83718.

Sound Signals for Mariners: An Inventive Field Which Is Not Overworked. C. H. Claudy. Gives an illustrated outline sketch of the field of sound signals for marine use. 1400 w. Sci Am—June 29, 1907. No. 85313.

Submarine Signaling (Segnalazioni Sottomarine). Luigi Boggiano. A comprehensive review of the methods used and the results obtained from trials in vari-



## MARINE AND NAVAL ENGINEERING

### Ships

ous navies. Ills. 10000 w. Rivista Marittima—No. 84917 E + F.

The Coston Night Signal. First Aid in Life Saving. Gives the history of this invention for marine use. Ills. 2000 w. Naut Gaz—Nov. 15, 1906. No. 80394.

### Slips.

A Simplified Method of Calculating Curved Launching Slips (Vereinfachte Berechnung von Kreisbogenformigen Ablaufsbahnen). Alfred Schwarzenberg. A mathematical paper deducing formulæ for the calculation of launching slips in the form of arcs. Ills. Tables. 2000 w. Schiffbau—June 12, 1907. No. 85644 D.

### Steamboats.

The Vessel of the Future. Arthur R. Biddell. Considers certain structural informs for the improvement of large passenger steamers. 2800 w. Int Marine Engng—Nov., 1907. No. 87808 C.

The Western River Steamboat. A. H. Blaisdell. An illustrated article describing the construction of these boats, their propelling machinery and other equipment, their performance, etc. Gives tests made of some of these boats, and information of interest. 4500 w. Jour Assn of Engng Socs—Oct., 1906. No. 81067 C.

Steamboat Architecture on the Western Rivers. Melville H. Kiel. Illustrates and describes the characteristic features of the boats of the Mississippi and its tributaries. 4000 w. Marine Rev—Oct. 3, 1907. No. 87437.

Steamboating on the Mississippi. Frederick D. Herbert. An interesting illustrated account of the early history of navigation on this river, the types of vessels used, and the recent boats in this service. 2500 w. Int Marine Engng—May, 1907. No. 83897 C.

The River Steamer S. S. Brown. H. H. Brown. Illustrated detailed description of a steel hull, western river packet boat recently built. 2500 w. Int Marine Engng—May, 1907. No. 83896 C.

The Steamer Maryland. George Jenkins and A. E. Woodruff. Describes the hull and propelling machinery of a new twin screw steel transfer boat for service between Cape Charles and Norfolk. Ills. 1600 w. Int Marine Engng—Nov., 1907. No. 87806 C.

New Steamer J. H. Sheadle. Illustrated detailed description of a modern lake bulk freighter. 3800 w. Marine Rev—Jan. 3, 1907. No. 81438.

New Steamer City of Cleveland. Illustrated description of a new lake steamer of exceptional beauty, recently launched,

### Steamships

for service between Detroit and Cleveland. 3000 w. Marine Rev—Jan. 10, 1907. No. 81599.

Details of the Three New Steamers Which Will Be Placed on the New York and Boston "Outside" Route by the New England Navigation Company. Profile, sections, and description of important new vessels. 1000 w. Naut Gaz—April 4, 1907. No. 83509.

New Swiss Lake Steamers. Trans. from *Zeit. des Ver. deut. Ing.* Illustrates and describes the Blümlisalp for Lake of Thun and the Rhein for the Lake of Constance. 1000 w. Int Marine Engng—Nov., 1907. No. 87807 C.

Stern-Wheel Steamer "Endeavor" for the Baptist Missionary Society. Illustrations, drawings, and description of a steamer for service on the Congo. 700 w. Engng—Jan. 18, 1907. No. 82000 A.

Passenger Steamers for the Cuyaba River, Brazil. Illustrates and describes vessels designed for the exceptionally shallow draught of 18 in. with steam up and bunkers half full. 800 w. Engng—May 10, 1907. No. 84446 A.

Paddle-Steamer "Bassein" for the Burma Railway Company. Illustrates and describes a large side-wheel paddle steamer recently built for steam ferry service on the Irrawaddy. 1000 w. Engng—June 21, 1907. No. 85401 A.

Performance of the Paddle-Wheel Steamboat New York of the Hudson River Day Line. James E. Denton. Read before the Soc. of Nav. Archts. & Marine Engrs. A report of the results of speed and power trials. Ills. 800 w. Naut Gaz—Nov. 29, 1906. No. 80840.

### Steamships.

Steamship Anticipation for 1907. Principally a discussion of the engineering features of the Lusitania and Mauretania. 1700 w. Engr, Lond—Jan. 18, 1907. No. 81992 A.

The New American Freighter Tuscan. George Jenkins. A single-screw steel freight steamer of the spar deck type, built for the highest class of the American Bureau of Shipping is illustrated and described. 2000 w. Int Marine Engng—April, 1907. No. 83345 C.

The New Steamers Mexican and Columbian. Illustrates and describes two freighters, being built at San Francisco, and their equipment. 2500 w. Int Marine Engng—June, 1907. No. 84657 C.

The Pacific Twin-Screw Steamers "Quillota" and "Quilpué." Illustrated description of steamers intended for passenger and mail service on the west coast

## MARINE AND NAVAL ENGINEERING

### Steamships

of South America. 1200 w. Engng—June 14, 1907. No. 85244 A.

The Channel Steamship Princess Ena. Illustrated description of the latest addition to the Channel fleet of the London & S.-W. Ry. 1200 w. Engr, Lond—Dec. 7, 1906. No. 81029 A.

The Royal Mail Steam Packet Company's T.-S. S. "Avon." Illustrates and describes this vessel which is intended for the South American mail service. Plates. 700 w. Engng—July 5, 1907. No. 85591 A.

The New White Star Liner "Adriatic." Illustrations, with description of this fine vessel, the largest at present afloat. 1200 w. Sci Am—May 25, 1907. No. 84545.

The New Indian Liner City of London. Illustrated detailed description of the vessel and its equipment. 1200 w. Int Marine Engng—Sept., 1907. No. 86573 C.

The New Hamburg-American Liner President Lincoln. Illustrated description of this new vessel and the equipment. 1200 w. Int Marine Engng—Aug., 1907. No. 85910 C.

Kronprinzessin Cecilie. Brief illustrated description of this fine twin-screw express steamship of the North German Lloyd Steamship Co. 2500 w. Marine Rev—Aug. 22, 1907. No. 86540.

The Steamships Delaware and Pawnee. Charles S. Linch. Illustrates and describes these latest additions to the fleet of the Clyde Steamship Co. 2000 w. Int Marine Engng—Nov., 1907. No. 87811 C.

The Royal Mail Steamer Araguaya. Illustrated description. 1000 w. Engr, Lond—Dec. 21, 1906. No. 81346 A.

Light-Draft Single Screw Passenger Steamer. Illustrates and describes the steel steamer Kalika, intended for service in and around Bombay, India. 4000 w. Int Marine Engng—Sept., 1907. No. 86576 C.

Single Screw Steam Light Vessels. Drawings and description of vessels for the United States Government, built according to the standard specification adopted. Int Marine Engng—Sept., 1907. Serial, 1st part. No. 86579 C.

See also Cargo Steamers, Lusitania, Mauretania, Revenue Cutters, and Turbine Steamers, under MARINE AND NAVAL ENGINEERING.

### Submarines.

The Catastrophe of the French Submarine Lutin. W. H. White. An account of the foundering of this vessel while practicing on the 17th of October, briefly describing the condition of the vessel

### Submarines

when raised and placed in dry-dock. 1500 w. Engr, Lond—Nov. 9, 1906. No. 80502 A.

The Submarines and Submersibles of France. An account of various vessels constructed since 1885, with illustrations and information concerning them. 4000 w. Engr, Lond—Dec. 21, 1906. No. 81347 A.

The Submarine Fleet of France. Brief illustrated descriptions of types of submarines and submersibles belonging to France. 1200 w. Naut Gaz—Oct. 3, 1907. Serial. 1st part. No. 87480.

The Construction and Handling of Submarines. Walter Bernard. Illustrates and describes the Holland, and the Lake types of submarines under competitive trials at Newport. 1400 w. Sci Am—May 18, 1907. No. 84390.

Submarine Boat. Brief illustrated description of certain improvements in means of governing invented by John M. Gage. 600 w. Marine Rev—Sept. 5, 1907. No. 86824.

The Progress of the Submarine Boat. Editorial review of the report issued by the Special Board appointed by the United States Navy Department to make tests as to the mechanical efficiency of different types of submarine boats. 2000 w. Engng—Aug. 16, 1907. No. 87363 A.

The Position of the Submarine. Editorial discussion of this question in connection with the details of the past year's work in the British navy. 2500 w. Engng—Dec. 28, 1906. No. 81537 A.

The Limitations of the Diving Submarine. Robert G. Skerrett. Reviews the experience of diving submarines in America, France, Great Britain and Russia, discussing the lessons and conclusions. Ills. 12800 w. Jour U S Art—Nov., 1906. No. 81772 D.

The Present and Future of Submarine Navigation. A. M. Laubeuf. Abstract translation of a paper read at Bordeaux Int. Cong. of Naval Archt. Discusses the field of activity for submarines, the differences between the submarine and submersible types, and related subjects. 3500 w. Engng—July 26, 1907. No. 86183 A.

Safe Submarine Vessels and the Future of the Art. Simon Lake, before the Inst. of Naval Archts. An account of personal experiences and dangers encountered and overcome in experimental work with submarines; a statement of requirements to be met, and of the progress made. Ills. 3500 w. Engr, Lond—March 22, 1907. Serial. 1st part. No. 83431 A.

## MARINE AND NAVAL ENGINEERING

### Submarines

**The Stability of Submarines.** W. H. Stuart Garnett. Considers some of the dangers inseparable from the present type of submarine boat, and means of lessening them, with a few suggestions for possible improvements. 3500 w. *Cassier's Mag*—Jan., 1907. No. 81785 B.

**The Stability of Submarines.** J. G. Johnstone. Describes the important features in a submarine of the diving type, and considers the statical stability and the stability of motion. 3 Plates. 6500 w. *Trans Inst of Engrs & Shipbldrs in Scotland*—Jan. 22, 1907. No. 82631 N.

See also *Salving*, under MARINE AND NAVAL ENGINEERING.

### Survey Vessel.

**Indian Survey Vessel "Palinurus."** Illustrates and describes a steel single-screw steamer recently built for the Government of India, intended for marine survey work. 1000 w. *Engng*—Sept. 13, 1907. No. 87211 A.

### Tachometer.

**Frahm's Resonance Tachometer and Its Use on War and Merchant Ships** (*Das Frahm'sche Resonanztachometer und dessen Verwendung als Umdrehungsfernzeiger für Kreigs und Handelsschiffe*). Friedrich Lux. Description of an ingenious electrical device for indicating the speed of a vessel. Illus. Serial. 3 parts. *Schiffbau*—Jan. 23, Feb. 13 and 27, 1907. No. 83609 each D.

### Tank Steamer.

**A Large Oil Steamer.** Plans and description of the largest tank steamer ever built in the United States. The cargo oil capacity is 2,500,000 gallons. 3800 w. *Int Marine Engng*—June, 1907. No. 84661 C.

### Tide Signaling.

**The Boyd Automatic Tide Signaling Apparatus.** Illustrates and describes an apparatus installed at Irvine, Scotland, to inform incoming captains of the state of the tide, as vessels can enter only at high tide. The invention of Martin Boyd. 900 w. *Sci Am Sup*—May 25, 1907. No. 84549.

### Torpedo Boats.

**Torpedo Vedette-Boats for the Roumanian Government.** Illustrated detailed description of a screw torpedo vedette-boat and its equipment. 1400 w. *Engng*—April 19, 1907. No. 84003 A.

**Notes on Motor Torpedo Launches.** C. T. Brady, Jr. Discusses the advantages of the internal combustion engine for this service. Ills. 700 w. *Int Marine Engng*—June, 1907. No. 84658 C.

### Turbine Steamers

**The Motor Torpedo Boat—A New Type—**Illustrated description of the Yarrow motor torpedo boat for the British Navy. 500 w. *Sci Am Sup*—Feb. 23, 1907. No. 82579.

**Oil-Fuel Turbine-Driven Torpedo-Boats.** Illustrated descriptions of a new series of boats for the British Navy. 1500 w. *Engng*—May 24, 1907. No. 84757 A.

**German Torpedo Boat Construction.** Information concerning these vessels, with illustration and brief description of the latest destroyer, fitted with turbines. 900 w. *Engr, Lond*—Sept. 13, 1907. No. 87218 A.

**Brazilian Torpedo Boat.** Plate, with brief description. 300 w. *Engr, Lond*—Oct. 4, 1907. No. 87598 A.

### Towing.

**The Automatic Steam Towing Machine.** Thomas S. Kemble. Briefly reviews the history of towing machines, discussing their theory and practical operation, and describes the latest type of Chase towing machine. 2500 w. *Int Marine Engng*—Aug., 1907. No. 85909 C.

### Trim Curves.

**Trim Curves.** A. E. Long. Shows how curves of sectional areas at different trims can be obtained, and how their properties can be utilized for trim calculations. Also discussion. 2 plates. 6000 w. *Trans N-E Coast Inst of Engrs & Shipbldrs*—July, 1907. No. 86490 N.

### Turbine Steamers.

**The Marine Steam Turbine.** J. W. Sothorn. Discusses some of the points affecting the efficiency of steam turbines for the propulsion of ships. Diagrams. 2800 w. *Naut Gaz*—March 14, 1907. No. 83090.

**Marine Steam Turbine Development.** Hon. C. A. Parsons and R. J. Walker. Deals with the development, giving particulars and results comparing turbine vessels with other vessels fitted with reciprocating engines. Plates. 6000 w. *Trans N-E Coast Inst of Engrs & Shipbldrs*—June, 1907. No. 85824 N.

**The Marine Steam-Turbine.** Hon. C. A. Parsons, and H. Wheatley Ridsdale. Read at meeting of the Inst. of Naval Archts. Discusses practical points in the application of the marine steam turbine; the design, construction, and running. Ills. 4000 w. *Engng*—July 12, 1907. No. 85874 A.

**Resumed Discussion on the Hon. C. A. Parsons and Mr. R. J. Walker's Paper on "Marine Steam Turbine Development."** 8700 w. *Trans N-E Coast Inst of Engrs & Shipbldrs*—July, 1907. No. 86489 N.

## MARINE AND NAVAL ENGINEERING

### Turbine Steamers

Steam Turbines for Ship Propulsion (Der Dampfturbinenantrieb von Schiffen). Felix Langen. Critical review of a number of turbines in marine service, with comparisons of performances. Serial, unfinished. 5 parts. Schiffbau—Jan. 9 and 23, Feb. 27, March 13 and 27, 1907. No. 83611 each D.

The First American-Built Turbine-Propelled Steamship. Describes the "Governor Cobb," giving many illustrations. 2500 w. Naut Gaz—Nov. 1, 1906. No. 80232.

The Turbine Steamer Governor Cobb. Description, with many illustrations, of the first American-built turbine-propelled steamship. 1800 w. Int Marine Engng—Feb., 1907. No. 81759 C.

Launch of the American Turbine Steamship Yale. An illustrated description of this vessel which is to ply on "the outside line" between New York and Boston, with an account of the launch. 2500 w. Naut Gaz—Dec. 6, 1906. No. 80889.

New American Turbine Steamers Yale and Harvard. Illustrated description of these boats, with sketch of the company which owns them. 6500 w. Naut Gaz—Aug. 8, 1907. No. 86318.

The Turbine Steamship Camden. A. F. H. Yates. Illustrated description of the vessel with report of trials. 1200 w. Jour Am Soc of Nav Engrs—Aug., 1907. No. 87766 H.

The New Turbine Steamship Creole. Illustrated description of a steamship equipped with Curtis turbines. It is for service between New York and New Orleans. 2000 w. Naut Gaz—July 4, 1907. No. 85431.

Builders' Trials of Curtis Turbine Steamer Creole. Charles B. Edwards. Illustrated description of vessel and equipment, with report of trials. 2500 w. Jour Am Soc of Nav Engrs—Aug., 1907. No. 87768 H.

Cunard Steamers Mauretania and Lusitania (Les Paquebots Géants de la Compagnie Cunard). L. Piaud. Description of these great turbine steamers. Illus. 2800 w. Le Génie Civil—Dec. 29, 1906. No. 82320 D.

The Turbine Propelled Steamer Kaiser. Dr. Alfred Gradenwitz. Illustrated description of this express steamer of the Hamburg-American Line. 1200 w. Int Marine Engng—Dec., 1906. No. 80561 C.

The Turbine Mail Steamer "Princesse Elisabeth" (La Malle-Poste à Turbines "Princesse Elisabeth"). E. and H. Comhaire. Describes the machinery and gives

### Wharf

the results of tests of this steamer built for service between Dover and Ostende. Ills. 2500 w. Bull Sci d l'Assn des Elèves—April, 1907. No. 84904 D.

See also Battleships, Cruisers, Lusitania, Mauretania and Yachts, under MARINE AND NAVAL ENGINEERING.

### Vibration.

Vibrations in Ships (Schiffsvibrationen). Walter Thele. Comparison of the vibrations set up in the engines of "Amerika," "Kaiserin Auguste Victoria" and "Deutschland." Illustrated by several diagrams. 2200 w. Zeitschrift des Vereines Deutscher Ingenieure—Feb. 23, 1907. No. 82922 D.

Vibrations in Recent Steamships (Vibrationserscheinungen neuerer Schnelldampfer). W. Thele. A discussion of vibration diagrams taken by the writer on the "Kaiserin Auguste Victoria," "Amerika," and "Deutschland," the first part of the serial giving a mathematical treatment of the laws of vibration. Ills. 3300 w. Serial. 1st part. Schiffbau—April 24, 1907. No. 84133 D.

See also Pallograph, under MARINE AND NAVAL ENGINEERING.

### Warships.

Warship Construction in 1906. A detailed account of last year's work in the British navy. 3500 w. Engng—Dec. 28, 1906. No. 81538 A.

The Influence of Machinery on the Gun Power of the Modern Warship. James McKechnie, before the Inst. of Naval Archts. Gives an analysis of the design of all machinery so far as it affects the fighting efficiency of the latest types of warships. Ills. 2800 w. Engr, Lond—March 22, 1907. No. 83430 A.

Progress of Warships and Machinery Under Construction in England. A review of events of importance in this field. 2000 w. Engr, Lond—Jan. 11, 1907. No. 81753 A.

Progress of Warships and Machinery Under Construction in England. Reviews the progress of the past six months. 2000 w. Engr, Lond—July 5, 1907. No. 85594 A.

See also American Navy, Armor, Battleships, Cruisers. Destroyers, German Navy, Gun Mounts, Submarines and Torpedo Boats, under MARINE AND NAVAL ENGINEERING.

### Wharf.

The United States Coaling Wharf, Guantanamo, Cuba. Illustrates and describes a wharf for the storage of 20,000 tons of coal and a coal handling plant with a capacity of 200 tons per hour, now

## MARINE AND NAVAL ENGINEERING

### Wrecking Steamer

under construction. 1000 w. Eng Rec—Feb. 9, 1907. No. 82227.

### Wrecking Steamer.

A New American Wrecking Steamer Relief. Illustrated description of a vessel built for service in the West Indies. 1000 w. Naut Gaz—June 27, 1907. No. 85338.

### Yachts.

Khedive's Turbine Yacht Mahroussa.

An interesting illustrated account of this reconstructed vessel, now a three-screw turbine vessel of marked elegance. 1600

### Yachts

w. Engr, Lond—Nov. 16, 1906. No. 80731 A.

The Khedive's Yacht "Mahroussa." Illustrated detailed description of this reconstructed yacht, including the fitting of new boilers and turbine machinery, the removal of the side paddle-wheels, and the reconstruction of the stern to suit triple-screw propulsion. 1400 w. Engng—Jan. 4, 1907. No. 81652 A.

The Steam-Yacht Medusa. Illustrations, with brief description. 500 w. Engng—July 26, 1907. No. 86179 A.

## MECHANICAL ENGINEERING

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### Accelerometer.

#### Accelerometer.

The Lanchester Accelerometer. Illustrates and describes an instrument for the measurement of starting and brake efforts. 1500 w. Autocar—Dec. 8, 1906. No. 81018 A.

#### Acetylene.

Dissolved Acetylene. Explains the advantages of this product for use in lighting motor cars, illustrating the mechanical details of the apparatus employed. 2500 w. Auto Jour—April 27, 1907. No. 84239 A.

#### Adams-Eight.

The Adams-Eight 35-40 H. P. Car. An illustrated review of the special features of this British car. 2000 w. Autocar—Jan. 19, 1907. No. 81975 A.

#### Aerocar.

A Description of the Model D Aerocar. A 2,000-pound car with a four-cylinder air-cooled motor rated at 20 h. p., carrying five passengers. 1400 w. Automobile—Nov. 15, 1906. No. 80402.

#### Africa.

Use of Motor Cars in Africa (Die Verwendung der Selbstfahrer in Afrika). D. Kürchhoff. Discussion of the adoption of motor cars and the number of each kind in use at the present time. 3400 w. Zeitschr des Mit Motorwagen Ver—No. 2, Jan., 1907. No. 83603 D.

#### Air-Cooled.

German Air Cooled Motors (Luftkühlvorrichtungen an deutschen Motorwagen). Wolfgang Vogel. Several types of air cooled automobile engines described and illustrated. 1700 w. Zeitschrift des Mitteleuropäischen Motorwagen-Vereins—No. 19. Oct., 1906. No. 81863 D.

The Present Status of American Air-

### AUTOMOBILES

### American

Cooled Motors (Der Gegenwärtige Stand der Amerikanischen Luftgekühlten Motoren). Alois Riehl. Illustrated description of various types showing present practice in America. 3800 w. Serial. 2 parts. Zeitschl d Mitt Motorwagen-Ver—May 31 and June 15, 1907. No. 85669 each D.

Air-Cooling of Automobile Engines. John Wilkinson. Explains the science of air-cooling in regard to the internal conditions of the cylinder, and discusses the external conditions. 1800 w. Pro Am Soc of Mech Engrs—June, 1907. No. 84638 F.

Air-Cooled Gas-Engine Cylinder Construction. Hugh Dolnar. Remarks on the earliest efforts to cool the cylinders, and illustrates and describes the practice of the Corbin automobile shops, New Britain, Conn. 2000 w. Am Mach—Vol. 30. No. 2. No. 81552.

#### Alcohol.

Alcohol as a Fuel for the Automobile Motor. Thomas L. White. Read before the Soc. of Auto. Engrs. Reviews the considerations to be dealt with in using alcohol as a fuel, discussing the carburation problem, and proposing a solution by means of a mixture of acetylene, alcohol vapor and air. 2200 w. Automobile—May 2, 1907. No. 84068.

#### Ambulance.

A Scotch Automobile Ambulance. Brief description with illustrations. 400 w. Automobile—Nov. 15, 1906. No. 80401.

#### American.

The American Cars of 1907 in General. Brief description of new models shown at the seventh automobile show. Illa. 4000 w. Automobile—Jan. 17, 1907. No. 81676.

# MECHANICAL ENGINEERING

## Appraising

### Appraising.

Appraising Imported Cars for Customs Duty. Harry W. Perry. Information as to the method of making an examination, and the work of the appraiser's office. Ills. 2000 w. Automobile—Jan. 10, 1907. No. 81618.

### Aries.

The Aries Petrol Cars. Illustrates details of a 30-h. p. chassis, which give a very correct impression of the standard Aries design, with descriptive notes. 1600 w. Auto Jour—Jan. 12, 1907. No. 81727 A.

### Armstrong-Whitworth.

The 28-36-H. P. Armstrong-Whitworth Car. Begins an illustrated detailed description of this new touring car. 5000 w. Auto Jour—Nov. 24, 1906. Serial. 1st part. No. 80810 A.

### Army Trains.

Electrically-Driven Target Trains in the German Army. Dr. Alfred Gradenwitz. Illustrations, with short description of trains moved by the Fowler steam traction engines. 800 w. Sci Am—March 2, 1907. No. 82645.

### Articulation.

Experimental Investigation of a New Scheme of Articulation of Motor Vehicles. A. W. Brightmore. Discusses the possibilities of front driving, giving an account of investigations of steering for front-driving vehicles. Ills. 3000 w. Auto Jour—March 9, 1907. No. 83099 A.

### Bearings.

Bearing Castings for Automobiles. E. F. Lake. Remarks on alloys introduced to meet the requirements of the automobile industry, discussing the qualities of the ingredients used in the making of castings for bearings. 3300 w. Foundry—Oct., 1907. No. 87355.

### Bentall.

The Bentall Petrol Cars. An illustrated description of a new British car. 1200 w. Auto Jour—Nov. 17, 1906. Serial. 1st part. No. 80706 A.

### Benz.

The 50-H.P. Four-Cylinder Benz Car. The chief features of this powerful machine are illustrated and described. 2000 w. Autocar—June 22, 1907. No. 85375 A.

### Benzine Motor.

Rate of Combustion in Benzine Locomotives (Die Feuergefährlichkeit der Benzinlokomotiven). Herr Beyling. Diagrams. 3800 w. Glückauf—Jan. 26, 1907. No. 83629 D.

## AUTOMOBILES

### Bodies.

Building of an Automobile Body. Illustrates and describes the process of construction of limousines at the Detroit factory. 600 w. Automobile—Nov. 1, 1906. No. 80198.

The Names of Motor Carriage Bodies. Explanation of leading types in use, with drawings and index. 2000 w. Autocar—Jan. 26, 1907. No. 82135 A.

Our Vile Bodies. G. Stuart Oglvie. A discussion of the form of body most suitable for a general utility car. 1800 w. Autocar—Feb. 2, 1907. Serial. 1st part. No. 82235 A.

### Bollee.

The 1907 Leon Bollée Cars. Illustrates one of the 4-cylinder live-axle models, and describes this car mainly, though referring to other types. 2000 w. Auto Jour—May 25, 1907. No. 84742 A.

### Brakes.

Brakes and Their Care and Repair. Victor Longheed. Considers the importance of maintaining brakes in proper condition, pointing out the essentials of such maintenance and condition. 2000 w. Automobile—May 2, 1907. No. 84069.

### Britannia.

The 18-24 H.P. Britannia Car. Illustrates and describes details. 1300 w. Autocar—March 16, 1907. No. 83259 A.

The Britannia Petrol Car. Illustrated description of a new car. 900 w. Auto Jour—July 20, 1907. Serial. 1st part. No. 85979 A.

### Cadillac.

The Cadillac 20-Horse-Power Four-Cylinder Engine and Governor. Walter Galland. Illustrated description of the motor of this new light-touring car. 600 w. Sci Am—Jan. 12, 1907. No. 81568.

The 20 H. P. Cadillac Car. Illustrated description of a well-designed four-cylinder, vertical engined car. 1500 w. Autocar—Aug. 24, 1907. No. 86715 A.

The 30-H. P. Cadillac Car. Illustrated description of this new car, and the three-speed epicyclic gear introduced. 2000 w. Auto Jour—Jan. 19, 1907. Serial. 1st part. No. 81970 A.

### Carbureters.

The Craven Carburetter. Illustrated description, with report of seven tests made. 1300 w. Autocar—June 15, 1907. No. 85233 A.

The Dentan Carbureter. Sections, with brief description of a novel carbureter. 1200 w. Auto Jour—Sept. 14, 1907. No. 87178 A.

## MECHANICAL ENGINEERING

### Carburettors

Float-Controlled Carburettors. — New and Old. Explains what happens in the carburettor and induction pipe of an engine at varying speeds, and gives illustrated description of the Gillett-Lehman device. 1700 w. Autocar—March 9, 1907. No. 83104 A.

Some Mysteries of the Carbureter. Charles B. Hayward. Explains causes of some of the troubles and means of correcting them. 3000 w. Automobile—Sept. 12, 1907. No. 86889.

The Carbureter and Its Functions. Charles E. Duryea. Read before the Soc. of Auto. Engrs. A discussion of the requirements and of the faults of past and present designs, describing the Duryea carbureter. 5000 w. Automobile—Oct. 3, 1907. No. 87413.

### Car Fittings.

An Interesting Car and Its Refinements. Brief illustrated description of the equipment of Mr. Henry Edmund's Daimler. 1200 w. Auto Jour—May 25, 1907. No. 84743 A.

### Car Testing.

Wellington's Car Testing Machine. Illustrated description of this machine for testing motor cars, and method of testing. 1200 w. Autocar—July 20, 1907. No. 85981 A.

### Chain Drives.

Chain Drives and Their Care and Repair. Victor Lougheed. Discusses types of chain drives, their advantages and disadvantages, care, repair, etc. Ills. 2000 w. Automobile—April 11, 1907. No. 83572.

### Chenard-Walcker.

The 16-20 H. P. Chenard-Walcker Car. Illustrates and describes the improvements to appear in the 1907 model. 1000 w. Autocar—Nov. 17, 1906. No. 80705 A.

### Cleaning

Accessibility and Cleanliness. F. Leigh Martineau. Read before the Inst. of Auto. Engrs. A study of this subject, considering both horizontal and vertical engines. 2500 w. Autocar—Jan. 19, 1907. Serial. 1st part. No. 81976 A.

An Automobile Vacuum Cleaning Plant. An illustrated description of a combined gasoline motor-propelled vacuum cleaner, in which the engine of the vehicle also drives the vacuum apparatus. 1000 w. Sci Am Sup—July 6, 1907. No. 85413.

### Clement.

The 25-35 H.P. Clement Car. The first part describes the engine and the clutch.

### AUTOMOBILES

### Commercial Vehicles

Illa. 800 w. Autocar—Oct. 5, 1907. Serial. 1st part. No. 87583 A.

### Clutches.

The Autoloc, an Automatic and Instantaneous System of Clamping (L'Autoloc, Système de Blocage Automatique et Instantané). M. A. Morel. Illustrated description of clamp or clutch, having a cam held in place by balls connected with a spring, and mathematical discussion of its principle. 2000 w. Génie Civil—Dec. 8, 1906. No. 81139 D.

The Friction Clutch in Automobile Practice. Forrest R. Jones. Discusses some of the undesirable properties in the types of clutches used. 2000 w. Automobile—Sept. 26, 1907. No. 87289.

### Commercial Vehicles.

Motor Cars for Heavy Loads Shown at Paris (Lastautomobile im Pariser Salon 1906). Herbert Bauer. Detailed description of cars for transporting loads of from 3 to 6½ tons. Illus. 5700 w. Zeitschr des Mit Motorwagen Vereins—No. 3, Feb., 1907. No. 83604 D.

The Commercial Vehicles of the Show. Howard Greene. Describes some of the types exhibited. 1800 w. Automobile—Jan. 17, 1907. No. 81678.

Coppock One-Ton Commercial Car. Illustrated description of a vehicle built at Marion, Ind. 1200 w. Automobile—Feb. 28, 1907. No. 82671.

Petrol Lorry. Illustrated description of a motor wagon or lorry, for heavy hauling, made in Milwaukee, in which both axles are driven. 900 w. Engr, Lond—June 14, 1907. No. 85248 A.

Gasoline Locomotives and Motor Cars. Illustrated descriptions of a gasoline locomotive, and a gasoline motor car recently built. 600 w. Eng News—Sept. 5, 1907. No. 86759.

The Fawcett-Fowler Steam-Car. Illustrated description of an interesting heavy steam-motor vehicle. 1500 w. Engng—July 19, 1907. No. 85995 A.

Five-Ton Steam Wagon. Illustrated detailed description of a vehicle built in Liverpool. The leading characteristics are two engines driving rear wheels through Renold chains, and a fan-cooled condenser and spring hubs. 2300 w. Engng—Dec. 14, 1906. No. 81248 A.

Motor Cars for Municipal Work. Harry W. Perry. Illustrates various vehicles used for city work, such as gasoline, electric and steam motors for fire apparatus, street sprinklers and sweepers, refuse wagons, police patrol and ambulance, etc. 2300 w. Munic Jour & Engr—Oct. 2, 1907. No. 87383 C.



# MECHANICAL ENGINEERING

## Commercial Vehicles

The Stoltz Steam Tractor (Dampf-Lastwagen Bauart Stoltz). Herr Pflug. Illustrates and describes the boiler, engine, and construction details of this vehicle for heavy freight service. 3500 w. Zeitschr d Mit Motorwagen Ver—May 15, 1907. No. 84948 D.

The Stoltz Steam Truck (Dampf-lastwagen Bauart Stoltz). Herr Pflug. Illustrates and describes the truck, engine, boiler, etc., and gives details of performance under various conditions. 2000 w. Verkehrstech Woche u Eisenbahntech Zeitschr—Aug. 31, 1907. No. 86953 D.

Motor Truck of the Roth-Gesellschaft in Schöningen (Motorlastwagen der Roth-Gesellschaft in Schöningen). Herr Pflug. Illustrated detailed description of this car for heavy trucking service. 2200 w. Zeitschr d Mitt Motorwagen Ver—May 31, 1907. No. 85670 D.

Swiss Motor Trucks (Schweizerische Motorlastwagen). A. Vogt. The first instalment of the serial illustrates and describes the "Soller" gasoline truck for heavy service. 2000 w. Serial. 1st part. Schweiz Bau—Sept. 28, 1907. No. 87629 B.

See also Ambulance, Emergency Wagon, Expositions, Farm Work, Omnibuses, Road Trains and Steam Cars, under AUTOMOBILES.

## Competition.

Town Carriage Competition. Gives awards and judges' report, with many illustrations of the cars. 3300 w. Auto Jour—Nov. 3, 1906. No. 80341 A.

The Competition for the Kaiser's Prize (Das Kaiserpreisrennen). M. Ettlinger. Gives tables showing the characteristics of the competing cars and their performances during the test. Ills. 8000 w. Zeitschr d Mit Motorwagen Ver—July 31, 1907. No. 86259 D.

Results of the American Automobile Association's Fourth Annual Tour for the Glidden and Hower Trophies. Brief account of results with illustrations of successful cars. 1500 w. Sci Am—Aug. 3, 1907. No. 86062.

The Grand Prix of the Automobile Club of France in 1907 (Le Grand Prix de l'Automobile-Club de France en 1907). Ch. Dantin. Gives details of the cars taking part in this race on the "Dieppe circuit" and illustrates and describes the winners. 3500 w. Génie Civil—July 13, 1907. No. 86211 D.

## Construction.

Bodies, Running Gear and Equipment of Touring Cars (Karosserie, Laufwerk und Ausrüstung von Tourenwagen). Lieut. Herzog. Illus. 2200 w. Zeitschr

## AUTOMOBILES

## Deasy

d Mit Motorwagen Ver—No. 21, Nov., 1906. No. 82303 D.

Limits of Tolerance in Automobile Parts. Thomas J. Fay. Discusses duplication of parts for automobiles, system necessary to meet requirements, metric measurements, etc. 2500 w. Automobile—March 28, 1907. No. 83302.

Some Features of Automobile Construction. Thomas J. Fay. Read before the Soc. of Auto. Engrs. Discussion of materials and points in construction. 2000 w. Automobile—May 23, 1907. Serial. 1st part. No. 84537.

Reliability in Car Construction. F. Strickland. Gives some interesting statistics and deductions from results of the Scottish Reliability Trials. 2000 w. Auto-car—Aug. 17, 1907. No. 86582 A.

Future Motor Car Construction. M. C. Krarup. Analyzes the present features and gives a forecast of probable developments. 4500 w. Ir Age—Oct. 10, 1907. No. 87536.

See also Automobiles, under MATERIALS OF CONSTRUCTION.

## Couplings.

Universal Joints for Automobiles. E. J. Bartlett. Gives an analysis of the Hooke joint, and description of various types of universal couplings used in auto-car construction. Ills. 3500 w. Am Mach—Vol. 30. No. 14. No. 83438.

## Cylinder Lubrication.

Cylinder Lubrication of Benzine Motors (Zylinderschmierung von Benzinmotoren). Herr Pflug. Properties of oils from different manufacturers compared as to viscosity, action under influence of heat, etc. 1200 w. Zeitschr d Mit Motorwagen Ver—No. 20. Oct., 1906. No. 81865 D.

## Cylinders.

The Number of Cylinders. Report of a discussion at the Automobile Club in England on "Six-Cylinder Engines v. Four-Cylinder Engines." 9000 w. Auto-car—Feb. 16, 1907. No. 82587 A.

## Daimler-Mercedes.

The Daimler-Mercedes Petrol Cars. Illustrated detailed description of leading features of these chain-driven cars. 1500 w. Auto Jour—Aug. 10, 1907. No. 86449 A.

## Deasy.

The 24-H. P. Deasy Car. Illustrates and describes this all-British touring-car, and its novel features of construction. 2500 w. Auto Jour—Nov. 10, 1906. Serial. 1st part. No. 80464 A.

# MECHANICAL ENGINEERING

## De Dion

## AUTOMOBILES

## Electromagnetic Control

### De Dion.

The New 8-H. P. De Dion Engine. Illustrated description of a beautifully designed little single-cylinder petrol engine. 1400 w. Auto Jour—Jan. 19, 1907. No. 81972 A.

### De la Buire.

The 24 H.P. De la Buire Car. Illustrates and describes features of interest in the design and construction of these French cars. 2000 w. Autocar—May 11, 1907. No. 84435 A.

### Design.

Questions of Motor Car Design. Remarks on faults in designing which also increase the cost needlessly. Ills. 2800 w. Engng—Jan. 18, 1907. No. 81996 A.

Some Early American Automobiles. Illustrations, with brief descriptions of steam machines, an electric automobile, and early gasoline cars. 3300 w. Sci Am—Jan. 12, 1907. No. 81567.

I. The Automobile. Frederick L. Garlinghouse. II. Automobile Transmission. E. H. Belden. III. Automobile Tires. H. W. Du Puy. Three short papers discussed together. Also short paper on Internal Combustion Engines, by William R. Flint. Ills. 12000 w. Pro Engrs' Soc of W Penn—April, 1907. No. 84026 D.

The Present Status of the Automobile (Ueber den Heutigen Stand unserer Automobile). Hugo Lentz. Considers various points of design and suggests where need for improvement lies. Ills. 4000 w. Zeitschr d Mitt Motorwagen Ver—June 15, 1907. No. 85671 D.

Fundamental Principles in the Construction of Automobiles (Konstruktionsgrundlagen für den Bau von Kraftwagen). Ernst Valentin. Discusses materials of construction, transmission gears, etc., and illustrates various types of cars. 5000 w. Zeitschr d Ver Deutscher Ing—Aug. 24, 1907. No. 86986 D.

See also Construction, under AUTOMOBILES.

### Dinin.

The Dinin Electric Automobiles (Les Automobiles Electriques "Dinin"). J. A. Montpellier. Illustrated description of the car, motor, storage batteries, etc. 2500 w. Electricien—July 13, 1907. No. 86203 D.

### Dismountable Chassis.

The Lacain Dismountable Chassis for Automobiles (Chassis Démontable pour Automobiles, Système Lacain). Pierre Noël. Illustrated description of frame which can be taken apart between the front and rear wheels, to enable the same

engine to be used with different bodies. 1500 w. Génie Civil—Dec. 1, 1906. No. 81136 D.

### Driving.

Four Wheel Driving and Steering for Electric Automobiles (Elektromobil mit Vierräderantrieb und Vierräderlenkung). E. H. Geist. Description of a car driven by gas-engine dynamo-motor combination with all four wheels drivers. Illus. 1600 w. Zeitschr d Mit Motorwagen Ver—No. 23, Dec., 1906. No. 82309 D.

### Dust.

The R. A. C. Dust Trials. Illustrations of some of the special devices entered, and of cars being driven over the prepared surfaces. 400 w. Auto Jour—Aug. 3, 1907. No. 86346 A.

### Early Vehicles.

A Relic of Early Motor Vehicles. Frank C. Hudson. Illustration, with brief account of a self-propelled vehicle which made regular trips in 1834 in Scotland. 400 w. Am Mach—Vol. 30, No. 26. No. 85296.

### Eight-Cylinder.

Hewitt Uncovers an Eight-Cylinder Creation. Describes the Hewitt 50-60 h. p. touring car, especially the details of its 8-cylinder motor. Ills. 1000 w. Automobile—Jan. 17, 1907. No. 81679.

### Electric.

The Proper Size and Voltage of Storage Battery Cells for Electric Automobiles. Frank B. Rae. A discussion of points affecting the selection of the size of a vehicle battery. 1700 w. Elec Wld—Dec. 15, 1906. No. 81054.

Electrically-Driven Motorcars at the Berlin Automobile Show in 1906 (Elektrisch betriebene Motorwagen auf der Automobilausstellung in Berlin 1906). K. Meyer. Illustrated description of various types. 9000 w. Serial. 1st part. Zeitschr d Ver Deutscher Ing—April 13, 1907. No. 84143 D.

Electric Vehicles (Elektrische Kraftwagen). Dr. E. Sieg. Illustrated review of recent progress in electric automobiles and their use in cities. 2500 w. Elektrotech Zeitschr—Nov. 1, 1906. No. 80659 B.

See also Gears and Petrol Electric, under AUTOMOBILES.

### Electromagnetic Control.

Electromagnetic Control of Motor Vehicles. Describes the invention of Arnaldo Paolo Zani, and its application. Diagrams. 1500 w. Elec Engr, Lond—Oct. 11, 1907. No. 87829 A.

# MECHANICAL ENGINEERING

## Emergency Wagon

## AUTOMOBILES

## France

### Emergency Wagon.

An Automobile Emergency Wagon for Fire Departments. Illustrated description of an interesting vehicle for carrying men and apparatus for controlling incipient fires. In service at Springfield, Mass. 800 w. Sci Am Sup—Jan. 26, 1907. No. 81934.

### Enfield.

Some Details of the Enfield Cars. Illustrations and particulars in regard to interesting details of these cars. The engine, steering gears, front axle, and the 25 h.p. change-speed gear. 900 w. Autocar—April 27, 1907. No. 84241 A.

### Expositions.

Automobiles at the Leipsic Show, October, 1906 (Die Leipziger Krystallpalast Ausstellung 5-14 Oktober, 1906). Description of automobile exhibits. 2000 w. Zeitschr d Mit Motorwagen Ver No. 19. Oct., 1906. No. 81864 D.

The Foreigners of the Garden Show. Remarks and brief descriptions of models shown, especially the 1907 designs. 1800 w. Automobile—Jan. 17, 1907. No. 81677.

Review of the Paris Motor Show. Illustrates and describes features of the exhibits. 5000 w. Autocar—Dec. 15, 1906. Serial. 1st part. No. 81234 A.

The Olympia Motor-Car Exhibition. An account of this successful show, giving illustrated descriptions of some of the exhibits. 8500 w. Engng. Nov. 23, 1906. Serial. 1st part. No. 80836 A.

Motor Car Engineering. Illustrates and describes engineering details shown at the Olympia exhibition. 2500 w. Mech Engr—Dec. 1, 1906. Serial. 1st part. No. 80917 A.

Commercial Motor Vehicle Exhibition. Some of the exhibits at the recent exhibition at Olympia are illustrated and described. 5000 w. Engr, Lond—March 15, 1907. Serial. 1st part. No. 83272 A.

The London Automobile Exhibition (Die Londoner Automobil-Ausstellung). Herbert Bauer. Description of cars at this show, with particulars of engines and general details. Illus. 4600 w. Zeitschr d Mit Motorwagen Ver—No. 23, Dec., 1906. No. 82305 D.

The First International Exposition of Commercial Automobiles in London, March, 1907 (Die erste Internationale Motorlastwagen-Ausstellung in London März 1907). Herbert Bauer. Illustrated detailed description of a large number of cars shown. 7000 w. Zeitschr d Mil Motorwagen Ver—April 30, 1907. No. 84946 D.

The International Automobile Exposition in Berlin in the Autumn of 1906 (Die Internationale Automobilausstellung in Berlin, Herbst 1906). A. Heller. Illustrated detailed descriptions of the exhibits, the first part dealing with internal-combustion-motor cars. 4000 w. Serial. 1st part. Zeitschr d Ver Deutscher Ing—May 18, 1907. No. 84982 D.

The Display of Motor Cycles and Automobiles at Milan, 1907 (La Mostra del Ciclo e dell' Automobile, Milano, 1907). Begins an illustrated description of the various exhibits at this show. 1800 w. Serial. 1st part. Industria—July 14, 1907. No. 86221 D.

See also Exhibitions, under INDUSTRIAL ECONOMY.

### Farm Work.

Motor Cars for Farm Work (Lastkraftwagen in der Landwirtschaft). A. Oschmann. Specifications and descriptions of working vehicles for farm use. Illus. 7700 w. Zeitschr des Mit Motorwagen Vereins—No. 4, Feb., 1907. No. 83605 D.

A Steam Cultivator. Illustrated description of an interesting machine shown at the Milan exhibition. 500 w. Engr, Lond—March 8, 1907. No. 83121 A.

The Castelin Automobile Plow. Describes a new system of plowing by the use of a gasoline motor and a special automobile. Ills. 600 w. Sci Am Sup—March 23, 1907. No. 83155.

### Fawcett-Fowler.

The Fawcett-Fowler Steam Car. Illustrates and describes a new steam-propelled car, shown at the Liverpool Exhibition. 1000 w. Auto Jour—Feb. 2, 1907. No. 82232 A.

### Fire-Engine.

Motor Steam Fire-Engine for Johannesburg. Illustrated description. Liquid fuel is used. 700 w. Engng—April 26, 1907. No. 84254 A.

### Float Chamber.

The Design of a Float Feed Chamber. Leon Carayol. Describes how the level of the petrol is maintained to avoid overflowing, explaining the theory of the design. Ills. 900 w. Autocar—July 20, 1907. No. 85980 A.

### Ford.

The Ford Petrol Cars. Illustrates and describes these American-built cars, especially a 4-cylinder model. 700 w. Auto Jour—June 1, 1907. Serial. 1st part. No. 84875 A.

### France.

Development of the French Automobile

# MECHANICAL ENGINEERING

## Franklin

Industry. Remarks on the Paris Salon and the position of the French industry in the present article. 1500 w. Engr, Lond—Dec. 14, 1906. Serial. 1st part. No. 81254 A.

## Franklin.

More Horse-Power for Franklins in 1908. An illustrated article describing the improvements introduced in the new models of this car. 2000 w. Automobile—Aug. 22, 1907. No. 86523.

## Frost.

Precautions Against Frost. E. W. Walford. Information in regard to precautionary measures and remedial measures in cases of damage to cars by frost. 1800 w. Autocar—Dec. 15, 1906. No. 81233 A.

## Fuels.

Producer Gas as a Fuel Substitute. Information concerning a gas-producer small enough to make the entire plant suitable for installation on an ordinary car. Ills. 1200 w. Automobile—Dec. 27, 1906. No. 81291.

Comparative Test of Alcohol, Kerosene, and Gasoline as Automobile Fuels. Report of a run from New York to Boston, of three identical cars, using the fuels named, giving interesting facts brought out. 1200 w. Sci Am—Feb. 9, 1907. No. 82175.

Problems of the Motor Industry. Vivian B. Lewes. Abstract of a paper read before the Motor Yacht Club. The present article discusses fuels, especially alcohol. 3000 w. Auto Jour—March 23, 1907. Serial. 1st part. No. 83410 A.

A British Motor Fuel. Giving information in regard to benzol, its properties, possibilities and price. 2300 w. Autocar—April 6, 1907. No. 83732 A.

Possible Fuels for Motor Cars. Condensed report of the Motor Union Fuels Committee. 3000 w. Auto Jour—July 27, 1907. No. 86155 A.

See also Alcohol and Fuels, under COMBUSTION MOTORS.

## Fumes.

The Smoke Emission Trials. Illustrated description of the competing devices entered for the Vapor Emission Trials, and the tests to which they were subjected. 2500 w. Autocar—March 23, 1907. No. 83408 A.

## Garages.

Up-to-Date Development of the Garage. Howard Greene. An illustrated article explaining the conveniences of the modern garage, and the devices used.

## AUTOMOBILES

## Gears

3000 w. Automobile—Dec. 20, 1906. No. 81999.

The Metropolitan Garage. A. Jordahl. Illustrated description of a reinforced concrete building being erected in New York City. 1000 w. Eng Rec—Jan. 12, 1907. No. 81580.

See also Inflammable Liquids, under MISCELLANY.

## Gear Box.

Tests of a Speed-Change Gear Box. Richard C. Williams. Describes tests which showed the efficiency of an automobile transmission box to decrease with increase of the speed ratio and to fall off markedly in reverse gear. Ills. 2000 w. Am Mach—Vol. 30, No. 19. No. 84303.

## Gears.

Automobile Change Gears and Their Journals. Henry Hess. Read before Soc. Auto. Engrs., N. Y. The present article discusses a few principles in mounting ball bearings, illustrating a number of gears. 2000 w. Automobile—April 18, 1907. Serial. 1st part. No. 83792.

Automobile Change Gears and Their Journals. Henry Hess. Read before the Soc. of Auto. Engrs. An illustrated discussion of how such gears and journals should be designed, and an analysis of the construction of many of the leading types. 3800 w. Am Mach—Vol. 30, No. 44. No. 87976.

Gear Changing. Marcus W. Bourdon. Gives explanations of the various changing movements and suggestions for a noiseless method of changing. 2000 w. Autocar—April 27, 1907. No. 84242 A.

The Johnston-Buddicom Change-Speed Gear. Illustrates and describes a device of the bevel differential or balance gear type, working in oil, in an oil-tight casing. 1200 w. Autocar—Dec. 8, 1906. No. 81019 A.

The Johnston-Buddicom Epicyclic Gear. Illustrates and describes a car on which this gear is installed, and also a pneumatic system by which either "speed" can be brought into play. 2200 w. Auto Jour—Dec. 15, 1906. No. 81230 A.

The Stanley Automatic Change-Speed Gear. Illustrated description of a mechanism which, by automatically changing the gears as required, renders a side lever unnecessary. 2500 w. Auto Jour—Feb. 9, 1907. No. 82448 A.

The Wicksteed Change-Speed Gear. Drawing and description of the construction, showing the manner in which the individual clutches are arranged and oper-

# MECHANICAL ENGINEERING

## Grout

## AUTOMOBILES

## Ignition

ated. 1000 w. Auto Jour—Feb. 9, 1907. No. 82449 A.

The Fairfax Epicyclic Gear. Explains the epicyclic principle of change-speed gears, and gives an illustrated description of the type. 1500 w. Auto Jour—April 27, 1907. No. 84240 A.

The Chenard-Walcker Speed Gear. Illustrated description. 700 w. Autocar—June 15, 1907. No. 85234 A.

Electrical Transmission Gears on Motor Vehicles. Alan Archibald Campbell Swinton. Read at Engng. Con. of the Inst. of Civ. Engrs. Briefly describes arrangements adopted. Short discussion. 2000 w. Elec Engr, Lond—June 21, 1907. No. 85383 A.

## Grout.

The Grout for 1907. Illustrates and describes this car. The only changes in the new model are in the way of conveniences and appointments. 900 w. Automobile—Feb. 7, 1907. No. 82173.

## Hillman-Coatalen.

The 25 H.P. Hillman-Coatalen Car. Illustrated description. 1200 w. Autocar—Oct. 12, 1907. No. 87821 A.

## Hispano Suiza.

A Promising Car from Spain. Illustrated description of the Hispano Suiza car, shown at Birmingham. 1100 w. Autocar—Jan. 26, 1907. No. 82136 A.

## History.

Ten Years Progress of the Motor Car Movement. Reviews the early history, and the development of the modern car from 1885 to the present day; giving the history of the automobile movements in the United Kingdom, and the sport of motor car racing. Ills. 38900 w. Motor Car Jour—Oct. 27, 1906. No. 80289 A.

## Horch.

The Horch Petrol Cars. Illustrated description of the chief features of these vehicles, built in Saxony. 1200 w. Auto Jour—June 22, 1907. Serial. 1st part. No. 85376 A.

## Horse-Power.

Variation in Horse-Power Developed by Automobile Gas Engines. A. E. Potter. Explains the meaning of horse-power and power rating. 2500 w. Sci Am Sup—Jan 26, 1907. No. 81935.

## Ignition.

Care of the Ignition Storage Battery. H. Gernsback. Information in regard to the inspection of a new battery, how to test the cells, and matters relating to its

care. 1000 w. Automobile—Jan. 3, 1907. No. 81419.

Essential Elements of Electric Ignition. Charles B. Hayward. An explanation of the rudiments, to be followed by a consideration of the various systems of ignition and a statement of their advantages and disadvantages, etc. 3000 w. Automobile—Feb. 21, 1907. Serial. 1st part. No. 82536.

Sources of Electric Ignition Current. Charles B. Hayward. The present article considers the chemical and mechanical sources of current in a general way, to be followed by detailed articles on theory and practice. Ills. 3500 w. Automobile—Feb. 28, 1907. Serial. 1st part. No. 82669.

Rudiments of Valve and Ignition Timing. Charles B. Hayward. Discusses the elementary requirements of timing, the factors to be considered, influence of valve design, etc. Diagrams. 3800 w. Automobile—March 21, 1907. No. 83193.

How the Magneto is Utilized for Ignition. Charles B. Hayward. Considers the different systems, characteristics of the current, how the time of ignition is altered, etc. Ills. 2000 w. Automobile—April 4, 1907. No. 83471.

Concerning the Use of the Dry Cell. Arthur P. Jackson. Considers that dry cells, intelligently used, furnish the best ignition. Discusses why they give out quickly and other troubles. 1200 w. Automobile—May 23, 1907. No. 84538.

Theory and Design of Spark Inductors (Theorie und Vorausberechnung der Funkeninduktoren). E. W. Ehner. The first part of the serial is devoted to a theoretical discussion of induction. Ills. Serial. 1st part. 3500 w. Elektrotech u Maschinenbau—May 5, 1907. No. 84975 D.

A Chapter on Magneto Ignition. Elmer G. Willyoung. Extract from Lecture No. 4, Correspondence School of Motor Car Practice. Explanatory. Ills. 1700 w. Automobile—Aug. 29, 1907. No. 86654.

Simms-Bosch High-Tension Magnetos. Illustrated description of various types. 2000 w. Autocar—Feb. 9, 1907. No. 82452 A.

The New Lacoste H. T. Magneto. Illustrated description of a high-tension magneto shown at Olympia. 1200 w. Autocar—March 23, 1907. No. 83407 A.

A New Gearless Magneto. Illustrated description of the Van Raden gearless high tension magneto. 900 w. Autocar—Sept. 14, 1907. No. 87200 A.

The Leitner Ignition and Lighting System for Motor Vehicles. Illustrates and

## MECHANICAL ENGINEERING

### Iris

describes a modification of the Leitner train-lighting system suitable for road motors of all kinds. 1000 w. Engng—Aug. 23, 1907. No. 86729 A.

### Iris.

The "Iris" Six-Cylinder Motor Car. Describes a new type of these cars in which there have been introduced improvements of interest. Ills. 2000 w. Engng—Nov. 9, 1906. No. 80497 A.

### Junior.

The Junior 18-24 H.P. and 28-40 H.P. Chassis. Illustrates and describes features of these Italian cars. 1200 w. Autocar—June 29, 1907. No. 85492 A.

### "Kisselkar."

The Kissel Kar. Illustrated description of a popular-priced car built in Wisconsin. 1200 w. Automobile—Jan. 31, 1907. No. 82067.

### Knocking.

Knocking in Motors: Its Cause and Effect. An explanation of the causes and effects. 2000 w. Automobile—Aug. 22, 1907. No. 86522.

### Lanchester.

The Six-Cylinder Lanchester Car. Illustrated detailed description of this 28-h. p. car, which differs in design from the majority of the cars in use. 1500 w. Autocar—Jan. 5, 1907. Serial. 1st part. No. 81627 A.

### Light Cars.

The 8 H.P. Sizaire & Naudin Light Car. Illustrated detailed description of this car which attracted attention at the last Paris Salon. 1300 w. Autocar—Feb. 23, 1907. No. 82824 A.

### Locomobile.

The Locomobile Presents Its 1908 Models. Illustrated description of two types, calling attention to new features. 1500 w. Automobile—July 25, 1907. No. 85901.

### Lubrication.

The Nature of Lubrication. Considers the perfectly lubricated bearing, the effect of varying load, and related subjects. 1600 w. Autocar—Oct. 19, 1907. No. 87951 A.

Lubricants for Motors. D. D. B. Glasgow. Discusses the advantages and disadvantages of various lubricants. 2500 w. Autocar—March 23, 1907. Serial. 1st part. No. 83409 A.

The Construction of Force Feed Lubricators. Begins a description of types of force feed lubricators, with illustrations showing the mechanism. 1100 w. Auto-

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mobile—Nov. 1, 1906. Serial. 1st part. No. 80197.

See also Cylinder Lubrication, under AUTOMOBILES; and Lubricants, under POWER AND TRANSMISSION.

### Maja.

The Maja Car. Illustrates and describes a car produced by the German Daimler Company. 1000 w. Autocar—Sept. 14, 1907. No. 87202 A.

### Martini.

The 40-50 H. P. Martini Car. Illustrated description. 1200 w. Autocar—June 1, 1907. No. 84874 A.

### Marvel.

Another Detroit: The Marvel Runabout. Illustrated description of a two-passenger vehicle, propelled by a four-cycle two-cylinder opposed motor. 1200 w. Automobile—Dec. 27, 1906. No. 81292.

### Mass.

The 18 H. P. and 24 H. P. Mass Cars. Illustrated description of cars gaining gold medals in the recent Scottish Reliability Trials. 1000 w. Autocar—Aug. 31, 1907. No. 86855 A.

### Materials.

Materials Used in Motor-Car Construction. E. J. Bartlett. Considers the more important materials used for this class of work with the general reasons for their selection. 2500 w. Am Mach—Vol. 29. No. 52. No. 81268.

Materials for Automobile Construction. Thomas J. Fay. Extract from Chapter I. of a work on this subject. 3300 w. Automobile—July 11, 1907. No. 85509.

### Mercedes.

The 1907 Mercedes Cars. An illustrated detailed description of the 35-h. p. model. 2000 w. Auto Jour—Nov. 10, 1906. No. 80465 A.

The Austrian Mercedes Petrol-Electric Cars. An illustrated description of these vehicles with remarks on the system. 1200 w. Auto Jour—Dec. 8, 1906. No. 81016 A.

The 6-Cylinder Mercedes Car. Illustrated description of an entirely new model. 1200 w. Auto Jour—Jan. 5, 1907. No. 81628 A.

The 75 H.P. Mercedes. An illustrated description of the new six-cylinder car. 1000 w. Autocar—July 13, 1907. No. 85854 A.

### Metallurgique.

The Metallurgique Petrol Car. Illustrates and describes the recent cars of

# MECHANICAL ENGINEERING

## Mors

this make, which have undergone considerable modification in construction. They are of the live-axle type. 1200 w. Auto Jour—Nov. 10, 1906. No. 80466 A.

The 60-80 H. P. Metallurgique Car. Illustrated detailed description of a new model built in Belgium. 600 w. Autocar—Nov. 3, 1906. No. 80343 A.

## Mors.

The Mors Petrol Cars. The present article illustrates and describes the frame and suspension, and the engine. 1500 w. Auto Jour—Aug. 17, 1907. Serial. 1st part. No. 86581 A.

## Motobloc.

The Motobloc Petrol Cars. An illustrated description of these French-built cars. 2000 w. Auto Jour—Sept. 14, 1907. Serial. 1st part. No. 87177 A.

## Motor Cooling.

The Anatomy and Pathology of Friction-Driven Pumps. Charles T. W. Hirsch. On this means of effecting water circulation for the prevention of overheating in automobiles and the difficulties. 1100 w. Motor Car Jour—June 15, 1907. No. 85231 A.

See also Air Cooled and Radiators, under AUTOMOBILES.

## Motor Cycles.

Motor Cycles at the International Auto Show, Berlin (Die Motorräder auf der Intern. Automobil-Ausstellung, Berlin). Wolfgang Vogel. Detailed description of different types shown at Berlin. Illus. 2800 w. Zeitschr d Mit Motorwagen Ver—No. 24, Dec., 1906. No. 82307 D.

Two-Speed Gears for Motor Bicycles. Rev. Basil H. Davies. Brief discussion of whether two-speed gears are necessary, whether there are any practical devices to be had at the present, and the specifications of a technically perfect gear. 2500 w. Auto Jour—Feb. 9, 1907. No. 82451 A.

## Motors.

Points of Resemblance and Difference in Our Automobile Motors (Ähnlichkeiten und Verschiedenheiten unserer Automobilemotoren). Ludwig von Löw. Compares several of the leading European types with regard to transmission, ignition, etc. Ills. 7000 w. Zeitschr d Mit Motorwagen Ver—May 15, 1907. No. 84947 D.

Engine of the Car de Luxe. Illustrates and describes the novel features of an automobile engine of the highest grade. 600 w. Sci Am—Jan. 12, 1907. No. 81569.

## AUTOMOBILES

## Omnibuses

A Paraffin Motor Car Engine. Illustrated description of a two-cylinder Allsop engine working on the Otto cycle. 700 w. Engr, Lond—June 21, 1907. No. 85404 A.

A Converted Otto Cycle Engine. Illustrates and describes an invention of C. R. Crosher, which appears to have removed some of the disadvantages of the two-stroke motor. 800 w. Autocar—Dec. 29, 1906. No. 81520 A.

## Mud Shields.

Keeping the Mud Under Control. Translation from *La Vie Automobile*, giving the experience of a leading French body builder. Ills. 1000 w. Automobile—Feb. 28, 1907. No. 82670.

## Napier.

The 1907 6-Cylinder Napier Cars. An illustrated article describing the improvements introduced in the latest cars of this firm. 1500 w. Auto Jour—Nov. 17, 1906. No. 80707 A.

The 40-H. P. 6-Cylinder Napier Car. Views and description of features of this 40-h. p. live-axle chassis. 1200 w. Auto Jour—Jan. 12, 1907. No. 81726 A.

The New 30-H.P. Napier Car. Illustrates and describes an interesting model. 1000 w. Auto Jour—Oct. 12, 1907. No. 87820 A.

## New Engine Co.

The New Engine Company's Motor-Car. Illustrated description of an interesting new design exhibited at Olympia. Plate. 2400 w. Engng—Nov. 9, 1906. No. 80496 A.

The N. E. C. Petrol Carriage. An illustrated detailed description of a new British-built car, with engine beneath the body. 2700 w. Auto Jour—Nov. 3, 1906. Serial. 1st part. No. 80340 A.

## New Models.

The 1907 Models. Illustrates and describes the 1907 Stearns, the Wayne, Logan model M, the Stoddard-Dayton, and the Dorris model B. 6000 w. Automobile—Nov. 22, 1906. No. 80569.

## Omnibuses.

A New Krieger Gasoline-Electric Omnibus for Use in Paris. Illustrated description. 800 w. Sci Am Sup—Feb. 2, 1907. No. 82089.

The Krieger Petrol-Electric Motor Omnibus (La Voiture Pétrolés-Electrique, Système Krieger). F. Drouin. An illustrated description of this motor omnibus in service at Berlin. 2000 w. Génie Civil—June 1, 1907. No. 85613 D.

The Dennis Motor Vehicles. Illustrates

# MECHANICAL ENGINEERING

## Omnibuses

and describes an interesting exhibit at the Olympia Show, a distinguishing feature being the drive by worm and worm-wheel. Also editorial. 3800 w. *Engng*—March 1, 1907. No. 82899 A.

The 40-45 H. P. Ryknield Motor 'Bus—An All-British Model. Illustrated detailed description of a petrol omnibus exhibited at Olympia. 1500 w. *Auto Jour*—March 9, 1907. No. 83098 A.

The Darracq-Serpellet Steam 'Bus. An illustrated detailed description. 2200 w. *Auto Jour*—April 6, 1907. Serial. 1st part. No. 83730 A.

Gasoline Buses for New York. Brief illustrated description of vehicles recently placed in service on Fifth Avenue. 1200 w. *St Ry Jour*—Aug. 24, 1907. No. 86542.

Motor Omnibuses. Lord Montagu of Beaulieu. Information in regard to motor omnibuses running in London, discussing their advantages and disadvantages. General discussion. 7500 w. *Jour Soc of Arts*—Feb. 15, 1907. No. 82584 A.

Petrol Motor-Omnibuses. W. Worby Beaumont. An illustrated study of these vehicles, the design of the underframes, details of mechanism, etc., and some account of working costs. 12000 w. *Inst of Mech Engrs*—March 15, 1907. No. 83469 N.

Petrol Motor Omnibuses. C. C. B. Morris. Abstract. Considers points in connection with the management and design of motor omnibuses. 2800 w. *Prac Engr*—May 31, 1907. No. 84878 A.

Transmission Gear for Motor Omnibuses (Das Getriebe der Automobil-Omnibusse). Robert Schwenke. Detailed description of transmission used on Daimler and other motor omnibuses. Illus. Serial. 1st part. 1400 w. *Zeitschr d Mit Motorwagen Vereins*—No. 23, Dec., 1906. No. 83666 D.

The Edinburgh Motor Omnibus Service. Map and description of the Scottish Motor Traction Company's installation and its operation. Ills. 2500 w. *Tram & Ry Wld*—Nov. 1, 1906. No. 80488 B.

The Motor 'Bus in London. Extracts from the proceedings of meetings held in London to discuss the use of heavy motor vehicles on London streets. 3500 w. *Auto Jour*—Aug. 3, 1907. No. 86348 A.

Technical Notes on the Motor Omnibuses of London (Technische Betrachtungen über die Londoner Motoromnibusse). Herbert Bauer. Illustrated detailed description of the various types of motor omnibus operating in London. 4000 w. Serial. 1st part. *Zeitschr d Mitt Motorwagen Ver*—June 15, 1907. No. 85672 D.

## AUTOMOBILES

## Petrol-Electric

Motor Cars for Public Service in Paris and Berlin (Automobile im öffentlichen Verkehr von Paris und Berlin). Herbert Bauer. Description, tables of fares, speeds attained, etc. Illus. 5100 w. *Zeitschr d Mit Motorwagen Ver*—No. 22, Nov., 1906. No. 82304 D.

The Management of the Motor Omnibus Company of St. Blaise (Der Betrieb der Motorwagen-Gesellschaft St. Blasen). Herr Pflug. Describes the cars, tariffs and management of a motor omnibus line operating over a difficult line in Switzerland, giving costs. Ills. 2500 w. *Zeitschr d Mit Motorwagen Ver*—March 31, 1907. No. 84165 D.

The Present Cost of Motor Bus Services. Mr. Vellguth. Gives detailed information of results obtained by German and English companies. 12700 w. *Bul Int Ry Cong*—May, 1907. No. 85290 E.

Operating Costs of the Modern Auto-Bus. H. Vellguth. Abstract translation from the *Archiv für Eisenbahnwesen*. Gives approximate costs of auto-bus service in Germany and England, explaining the conditions. 1200 w. *St Ry Jour*—Nov. 17, 1906. No. 80454 C.

## Orleans.

The British-Built Orleans Cars. Illustrated description of 35 h. p. 6-cylinder, and the 40 h. p., 4-cylinder cars. 1200 w. *Auto Jour*—March 2, 1907. Serial. 1st part. No. 82881 A.

## Peerless.

Peerless 1908 Presentation. Illustrated discussion of details of the new models. 1400 w. *Automobile*—Sept. 26, 1907. No. 87290.

## Pennsylvania.

Type C Pennsylvania "50." Illustrates and describes the distinctive features of the 50 h.p. Pennsylvania car for 1908. 1600 w. *Automobile*—Oct. 3, 1907. No. 87414.

## Petrol-Electric.

Petrol-Electric Transmission for Road Vehicles in Comparison with Purely Mechanical Systems. E. W. Hart and William P. Durtall. The present article is principally short illustrated descriptions of the various petrol-electric systems that have been tried, introductory to a statement of the advantages of electric transmission. Editorial also. 4500 w. *Elec Engr, Lond*—Jan. 25, 1907. Serial. 1st part. No. 82140 A.

The British Thomson-Houston Company's Petrol-Electric System for Commercial Vehicles. General remarks on petrol-electric systems, with illustrated description of Thomson-Houston system, which consists of a dynamo driven by a



# MECHANICAL ENGINEERING

## Pilgrim

petrol engine, the whole of the engine power being converted by the dynamo into electrical energy, which is transmitted through a controller to two motors driving the road wheels. 2800 w. Elec Engr, Lond—March 8, 1907. No. 83107 A.

The British Thomson-Houston Petrol-Electric System. Illustrates and describes the "simple electric" system adopted by this firm; the present article considers the mechanical features. 1800 w. Auto Jour—May 11, 1907. Serial. 1st part. No. 84434 A.

Petrol Tractors. J. F. Gairns. An illustrated account of the best English practice in the use of gasoline automobile traction. 2500 w. Cassier's Mag—May, 1907. No. 84055 B.

## Pilgrim.

The 25-30 H.P. Pilgrim Car. An illustrated description of a British-made car driven by a horizontal engine. 2000 w. Autocar—April 27, 1907. No. 84243 A.

## Pneumatic Hub.

The "Simplex" Pneumatic Hub. Remarks on the action of such hubs, with illustrated description of the constructional details. 2700 w. Auto Jour—Oct. 27, 1906. No. 80291 A.

A New Design Pneumatic Hub. Brief illustrated description of the invention of G. W. Bell, using compressed air as a buffer. 800 w. Automobile—Dec. 13, 1906. No. 80965.

## Pope-Hartford.

The 25-H. P. Pope-Hartford Petrol Car. Illustrates and describes the interesting features of this American car. 1200 w. Auto Jour—Jan. 19, 1907. No. 81971 A.

## Porthos.

The Porthos Petrol Car. An illustrated description of a car of novel design, having a stationary live-axle enclosed in a rotating tube. 1400 w. Auto Jour—April 27, 1907. Serial. 1st part. No. 84238 A.

The Six-Cylinder Porthos Car. Illustrated detailed description. 1200 w. Autocar—Sept. 14, 1907. No. 87201 A.

## Pullman.

The New York Company's 1907 Pullman Car. Illustrated description of the Model E touring car. 1200 w. Automobile—Nov. 1, 1906. No. 80199.

## Pumps.

Idiosyncrasies of Friction-Driven Pumps—Their Prevention and Cure. Considers the troubles that may occur when this means of avoiding overheating is

## AUTOMOBILES

## Remodeling

used on motor cars. Ills. 1700 w. Auto Jour—Sept. 28, 1907. No. 87505 A.

The Pittler Rotary Pump and Motor at the Olympia Exhibition. Illustrated detailed description of this rotary engine and its application to an omnibus chassis. 1800 w. Engng—Sept. 27, 1907. No. 87521 A.

## Race Course.

Brooklands Motor Race Course. Plan and description of this English race course, nearing completion, with abstract of the more important regulations. Ills. 2500 w. Auto Jour—Dec. 22, 1906. No. 81329 A.

Brooklands Motor Track. A remarkable motor track nearing completion in England is illustrated and described. 2500 w. Auto Jour—June 1, 1907. No. 84876 A.

## Racer.

America's Candidate for the Grand Prix. W. F. Bradley. An illustrated detailed description of the new Christie car. 1500 w. Automobile—April 11, 1907. No. 83571.

## Radiators.

Concerning Radiators and Their Functions. M. Baudry de Saunier. An illustrated article discussing automobile water coolers, and radiators of various types. 1500 w. Automobile—Nov. 8, 1906. No. 80318.

Honeycomb Radiators—Their Construction. L. Baudry de Saunier. An illustrated study of these radiators as applied on automobiles. 1300 w. Automobile—Jan. 31, 1907. No. 82065.

## Rambler.

Ramblers for 1907. Illustrates and describes the improvements introduced in the new models. 1600 w. Automobile—Jan. 31, 1907. No. 82066.

## Regulations.

How France Controls Her Automobileists. W. F. Bradley. Information in regard to regulations for owners and operators, system of identification, etc. 1500 w. Automobile—July 4, 1907. No. 85436.

## Reliability.

Scottish Reliability Trials—Report and Results. An illustrated report of the Scottish Auto-Club, with tabulated results. 5000 w. Auto Jour—Aug. 3, 1907. No. 86347 A.

The Reliability of Motor Cars. Editorial on the value of the Scottish trials, and the performance of the cars. 2000 w. Engng—Sept. 26, 1907. No. 87079 A.

## Remodeling.

How to Improve an Old Car. Victor

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## Rims

Lougheed. Suggestions for bringing an old car into the best possible working condition. 2000 w. Automobile—Nov. 8, 1906. Serial. 1st part. No. 80317.

## Rims.

A New Removable Rim. Illustrated description of the rim invented by Dr. Doolittle of Toronto. 1200 w. Autocar—Nov. 17, 1906. No. 80704 A.

Detachable Rims. Brief illustrated descriptions of several designs. 1400 w. Auto Jour—Dec. 1, 1906. No. 80904 A.

## Road Trains.

Traction Engine (Motorlastzug). A. Heller. Description of a steam motor driven vehicle for hauling other wagons. Illus. 1300 w. Zeitschr d Vereines Deutscher Ingenieure—Jan. 26, 1907. No. 82362 D.

The Freibahn Train Automobile (Train Automobile de la Société Freibahn). A. Bidault des Chaumes. Illustrated description of a heavy steam traction engine for hauling heavy loads on highways. 2000 w. Génie Civil—April 27, 1907. No. 84117 D.

The Renard Road Train. Illustrated description of this train of road vehicles, in which the power from the locomotive is transmitted by a shaft through the train so that each vehicle is independently driven. 800 w. Auto Jour—Feb. 23, 1907. Serial. 1st part. No. 82823 A.

The Renard and Sourcouf Road-Train System. Benjamin H. Thwaite and Richard F. Thorp. Reviews the development of the mechanical road transport system and describes in detail the motor road-train invented by Col. Renard. Ills. 7700 w. Soc of Engrs—April 8, 1907. No. 83790 N.

## Rolls-Royce.

The 6-Cylinder 40-45-H. P. Rolls-Royce Cars. Illustrated article describing particulars of this new British car. 1500 w. Auto Jour—Dec. 8, 1906. No. 81017 A.

## Rover.

The Rover Cars. Illustrates and describes the leading characteristics of these cars. 2000 w. Auto Jour—Oct. 5, 1907. Serial. 1st part. No. 87582 A.

## Royal Tourist.

Royal Tourist for 1907. Illustrates and describes the improvements found in the 1907 model. 2000 w. Automobile—Jan. 24, 1907. No. 81918.

## Roydale.

The 18-22 H. P. Roydale Car. Illustrated description of a British car having

## AUTOMOBILES

## Small

new features. 2000 w. Autocar—March 2, 1907. No. 82883 A.

## Shock Absorber.

The Suspension of Industrial Vehicles and Pneumatic Shock Absorbers (La Suspension des Vehicules Industriels et les Amortisseurs Pneumatiques). M. J. Patoureaux. Illustrated detailed description of a new pneumatic shock absorber with mathematical discussion of the theory on which they are built. 6000 w. Mem Soc Ing Civ de France—Feb., 1907. No. 83676 G.

## Siddeley.

The Siddeley 30-Horse-Power Motor-Car. Illustrated detailed description of a new design on exhibition at the Olympia Show. Plate. 2000 w. Engng—Nov. 9, 1906. No. 80495 A.

The 30 H.P. Siddeley Car. Illustrated detailed description of this British-built car. 1000 w. Autocar—Sept. 28, 1907. Serial. 1st part. No. 87507 A.

## Side Frames.

Importance of Strength in Side Frames. Thomas J. Fay. Discusses the use of alloy steel, giving the characteristics and composition of various steels, and their suitability, or otherwise, for automobile construction. Ills. 2500 w. Automobile—Feb. 7, 1907. No. 82172.

## Simms-Welbeck.

The 30-35 H. P. Simms-Welbeck Car. Illustrates and describes a six-cylinder car of British manufacture. 2000 w. Autocar—April 6, 1907. No. 83731 A.

## Singer.

The New Singer Cars. Describes and illustrates details of the 1907 model of this company. 1200 w. Autocar—Nov. 3, 1906. No. 80342 A.

## Skidding.

The Debatable Problem of Side Slips. Thomas L. White. Begins a study of the cause and remedy. 1800 w. Automobile—Nov. 15, 1906. Serial. 1st part. No. 80399.

How Far Skidding is Due to Road Surfaces. Douglas MacKenzie. Read before the Roy. Auto. Club of Gt. B. & Ire. Discusses briefly the materials and construction of non-skidding roads. 1200 w. Automobile—Aug. 15, 1907. No. 86440.

## Small.

Small Automobiles (Die kleinen Motorwagen). Description, with particulars and dimensions of 31 cars, of less than 1,500 pounds weight. Ills. 8300 w. Zeitschr d Mit Motorwagen Ver—No. 20. Oct., 1906. No. 81866 D.

## MECHANICAL ENGINEERING

### Speed

#### Speed.

The Effect of Weight Upon Speed. A report of tests made on the Brooklands track, showing the small difference made in the speed of a racing car by considerable variation in weight. 9000 w. Auto Jour—Sept. 7, 1907. No. 87050 A.

#### Speed Indicators.

Smith's Speed-Indicator Factory, Watford. Illustrates and describes these speed-indicators for motor-cars, and the factory where they are made. 1200 w. Engng—May 31, 1907. No. 84893 A.

#### Springs.

Construction of Motor Vehicle Springs. J. G. Rumney. Read before the Soc. of Auto. Engrs. Calls attention to the methods which should be followed in the calculation of springs so as to guard against excessive deflection. 2500 w. Automobile—Aug. 29, 1907. No. 86652.

#### Spyker.

The 30-42 H.P. Spyker Chassis. A car of Dutch origin, remarkable for its smooth running and reliability, is illustrated and described. 1600 w. Autocar—Feb. 2, 1907. No. 82234 A.

#### Stability.

A Formula Relative to a Condition of Stability of Automobiles and Especially of the Motor Omnibus (Formule Relative à une Condition de Stabilité des Automobiles et Spécialement des Autobus). Georges Marié. A theoretical and mathematical discussion of the conditions which have to be fulfilled to prevent skidding, overturning, etc. Ills. 12000 w. Mem Soc Ing Civ de France—June, 1907. No. 86908 G.

#### Starting.

An Automatic Carbonic Acid Gas Starter for Automobile Motors. Illustrated description of the new apparatus known as the Cinogene, a device for starting the motor of an automobile without having to turn the starting crank. 800 w. Sci Am Sup—Dec. 8, 1906. No. 80881.

The Letombe Self-Starter. Illustrated description of the device which obtained the first award at the recent trial in Paris in connection with the Deutsch Prize. 700 w. Auto Jour—Jan. 19, 1907. No. 81973 A.

The Saurer Self-Starter. Illustrated detailed description of a self-starting device invented by Herr Hippolyte Saurer. 1200 w. Autocar—March 30, 1907. No. 83541 A.

Compressed Air for Self-Starting Devices. Charles B. Hayward. General re-

### AUTOMOBILES

### Steering Gears

marks on starting devices with an illustrated description of the device employed on the Renault cars, which has been recently improved. 800 w. Automobile—Jan. 3, 1907. No. 81420.

Motor Starting Devices for Gasoline Automobiles. Harold H. Brown. Illustrates and describes some ingenious mechanical contrivances that do away with the starting crank. 3000 w. Sci Am Sup—Aug. 3, 1907. No. 86067.

#### Steam Cars.

Steam Cars *versus* Petrol Cars at the A. C. G. B. I. A discussion opened by Frederic A. Coleman, in which he summarized the superior merits of external combustion. 3500 w. Auto Jour—March 9, 1907. No. 83101 A.

The 10-H. P. Bolsover Steam Car. A recently built low-power machine is illustrated and described. It is of the live-axle type. 2200 w. Auto Jour—March 16, 1907. No. 83258 A.

The Turner-Miesse Steam Car. Illustrates and describes a car of simple construction. 2500 w. Autocar—March 30, 1907. No. 83542 A.

Steam as a Motive Power for Public Service Vehicles. Thomas Clarkson. Presents the advantages of steam for public service work, and gives an illustrated detailed description of an automatic steam generator and its operation when applied to omnibuses. 6500 w. Inst of Mech Engrs—Nov. 16, 1906. No. 80838 N.

Boilers for Steam Vehicles. F. Strickland. Brief illustrated descriptions of typical forms of boilers, with special consideration of boilers for steam vans. 3000 w. Auto Jour—March 9, 1907. No. 83100 A.

Steam Motor Wagons at Olympia. Illustrates and describes particulars of some of the steam-operated vehicles shown. 1500 w. Mech Engr—March 23, 1907. Serial. 1st part. No. 83413 A.

#### Steering Gears.

Types of Automobile Steering Mechanisms. E. J. Bartlett. Discusses their comparative merits for various kinds of service, and the principles controlling their design and laying out. Diagrams. 4000 w. Am Mach—Vol. 30, No. 30. No. 85882.

The Design of an Automobile Steering Gear. E. W. Graham. Discusses some of the problems to be solved and the details of the design. Ills. 3500 w. Am Mach—Vol. 30, No. 40. No. 87380.

A Criticism of Steering Gears in Gen-

## MECHANICAL ENGINEERING

### Sturtevant

eral Use. Louis T. Weiss. A criticism of the action of the connecting rod with suggestion of a way to prevent the dropping of the rod if the springs should break. 800 w. *Automobile*—Sept. 26, 1907. No. 87291.

### Sturtevant.

The Sturtevant Petrol Car. An American vehicle having an automatic change-speed gear is illustrated and described. 1500 w. *Auto Jour*—Feb. 2, 1907. No. 82233 A.

### Sunbeam.

The New Sunbeam Cars. Begins an illustrated detailed description of the new six-cylinder touring-car of this company. 1200 w. *Autocar*—Nov. 10, 1906. Serial 1st part. No. 80469 A.

### Thames.

The 40-50 H. P. Thames Chassis. Illustrated detailed description of the chassis of the six-cylinder Thames car shown at Olympia. 1200 w. *Autocar*—March 23, 1907. No. 83405 A.

### Thomas.

Details of the 1907 Thomas "Flyer." Illustrates and describes the changes introduced. 1400 w. *Automobile*—Nov. 15, 1906. No. 80400.

The Thomas "Forty" Touring Car. Illustrated description of the motor design and accessories, the transmission, running gear, and brakes of this new car. 2000 w. *Automobile*—Jan. 3, 1907. No. 81418.

### Thornycroft.

The 30-H. P. Thornycroft Car. Brief illustrated description of a new model—a four-cylinder 30-h. p. car. 900 w. *Auto Jour*—Nov. 17, 1906. No. 80708 A.

### Tires.

What the Tire Makers Have to Offer. Describes the tire exhibit at the American Automobile Show of 1907. 2500 w. *Automobile*—Jan. 17, 1907. No. 81680.

American Detachable Tires and Removable Rims. C. B. Hayward. An illustrated article reviewing progress in tires, removable rims, and detachable tires. 3300 w. *Automobile*—Feb. 14, 1907. No. 82299.

Elastes — Latest Developments. Illustrated description of improvements made in this unpuncturable core for pneumatic tires. 900 w. *Auto Jour*—Sept. 28, 1907. No. 87506 A.

The Interchangeability of Tyres. Information from the principal tyre makers with regard to interchangeability and re-

### AUTOMOBILES

### Weigel

lated subjects. 1800 w. *Autocar*—March 23, 1907. No. 83406 A.

How to Make Vulcanized Tyre Repairs. Illustrates and describes the various means of effecting sound and satisfactory vulcanized repairs to tyre covers and air tubes. 2500 w. *Autocar*—March 9, 1907. Serial 1st part. No. 83103 A.

### Training.

Training the Novice to Drive. Illustration, with brief description of the device adopted at the Victoria Street Motor Garage, London. 600 w. *Auto Jour*—Nov. 10, 1906. No. 80467 A.

### Transmissions.

The Pittler Hydraulic Transmission for Motor-Cars. Illustrated description of a novel system. Only the general arrangement as applied to motor cars is given. 1600 w. *Motor Car Jour*—Jan. 5, 1907. No. 81625 A.

Transmissions. Brief illustrated descriptions of new forms of transmission gear. 5500 w. *Sci Am*—Jan. 12, 1907. No. 81570.

See also Design, Omnibuses and Petrol Electric, under AUTOMOBILES.

### Troubles.

General Pointers for the Novice Owner. Charles B. Hayward. Advice to beginners in driving automobiles, calling attention to troubles that are perplexing. 2500 w. *Automobile*—June 20, 1907. No. 85213.

### Two-Cycle.

A New French Recruit to the Two-Cycle. Translation from *L'Automobile*. Illustrated detailed description of the Dubois two-cycle motor. 1800 w. *Automobile*—March 28, 1907. No. 83303.

### Valveless.

The 20-H.P. Valveless Car. Illustrated detailed description of an unusual car. 1700 w. *Auto Jour*—Oct. 5, 1907. Serial 1st part. No. 87581 A.

### Vauxhall.

The 12-16 H. P. Vauxhall Car. The present number describes the engine of this new car. 900 w. *Autocar*—Nov. 10, 1906. Serial 1st part. No. 80468 A.

### War Cars.

Latest Designs of the Motor in Warfare. W. G. Fitz Gerald. Illustrates and describes recent designs in war automobiles, with comments on their use. 1200 w. *Sci Am*—March 23, 1907. No. 83149.

### Weigel.

The 40 H. P. Weigel Gear-Driven Car

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### Westinghouse

Illustrates and describes details of this car. 2000 w. Autocar—Oct. 27, 1906. No. 80292 A.

The 40-H.P. Weigel Car. Illustrates and describes a British built car erected from various parts manufactured by others. Leading characteristics and dimensions are discussed in this number. 1200 w. Auto Jour—Feb. 2, 1907. Serial. 1st part. No. 82231 A.

The 25-H.P. Weigel Car. Illustrated description of a new model of medium power. 1600 w. Auto Jour—Sept. 21, 1907. No. 87329 A.

### Westinghouse.

The Westinghouse Petrol Cars. Illustrates and describes the leading features of these cars, and also some of the minor details. 2500 w. Auto Jour—Sept. 7, 1907. No. 87049 A.

### Wheels.

Wire and Wood Wheels. John V. Pugh. Considers the relative merits of wire and wood wheels, their durability, etc. Ills. 2400 w. Autocar—Dec. 22, 1906. Serial. 1st part. No. 81328 A.

Tires, Patent Rims, and Wheels at the Salon. W. F. Bradley. Illustrates and describes some of the dismountable rims, and some of the tires shown at the Paris Salon. 1000 w. Automobile—Jan. 3, 1907. No. 81417.

The Heel of Achilles. G. Stuart Ogilvie. On resilient wheels in relation to the self-propelled road carriage. 1600 w. Autocar—April 6, 1907. Serial. 1st part. No. 83733 A.

Spring Wheels (Federnde Räder). Herr Ruthemeyer-Friedenau. Illustrated detailed description of various types. 2000 w. Zeitschr d Mit Motorwagen Ver—April 15, 1907. No. 84166 D.

The Rudge-Whitworth Detachable

### COMBUSTION MOTORS

### Alcohol

Wire Wheel. Illustrations of the wheel, with remarks on its advantages. 1200 w. Auto Jour—Aug. 17, 1907. No. 86580 A.

### White.

Steam Plant of the White Motor Car. R. C. Carpenter. An illustrated description of this plant and the results of a series of tests, as an example of what can be accomplished in the use of steam of high pressure and with a high degree of superheat. 6800 w. Pro Am Soc of Mech Engrs—Nov., 1906. No. 80523 C.

The 1907 White Steam Cars. Remarks on the stages of progress in these cars, with illustrated description of two new models and a radical modification of system. 1800 w. Auto Jour—Nov. 17, 1906. No. 80709 A.

Test of a White Motor Car at the University of California. Arthur B. Domooski. Brief description of the car with report of test. 2000 w. Cal Jour of Tech—Oct., 1907. No. 87983.

### Wind Resistance.

Wind Resistance. Douglas Leechman. Discusses some effects of wind pressure, the importance of form, and related subjects, as applied to motor vehicles. 3000 w. Auto Jour—Aug. 24, 1907. No. 86713 A.

### Wind Screens.

The Effect of Wind-Screens on Speed. An illustrated account of experiments on the Brooklands race track. 2000 w. Auto Jour—Aug. 24, 1907. No. 86714 A.

### Züst.

The Züst 28-40 H. P. Chassis. Illustrated description of this Italian car, calling particular attention to the four-cylinder engine. 1200 w. Autocar—March 9, 1907. No. 83102 A.

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### Alcohol.

Denatured Alcohol: Its Manufacture and Some of Its Uses. Henry Leffmann. Information of interest, with short discussion. 2500 w. Pro Engrs' Club of Phila—Jan., 1907. No. 82548 D.

Denatured Alcohol. S. Lawrence Bigelow. An interesting article giving information in regard to alcohol, its manufacture, the properties of denaturants, uses of denatured alcohol, costs and prices. 10500 w. Pop Sci M—March, 1907. No. 82660 C.

Denatured Alcohol: Its Production and

Uses. Arthur H. Bosworth. Considers the commercial sources of alcohol and the uses to which it may be applied. 3000 w. Yale Sci M—March, 1907. No. 83160 C.

The Manufacture, Denaturing, and the Technical and Chemical Utilization of Alcohol. M. Klar. The present number considers the distillation of alcohol, its production from starch, yield of wash and of volatile by-products. 2000 w. Sci Am Sup—May 11, 1907. Serial. 1st part. No. 84332.

Alcohol from Peat. Briefly describes the nature of certain processes for the extrac-

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## Alcohol

tion, on a large scale and at a low cost, of alcohol from peat. Also considers the possibility of utilizing this fuel. 3000 w. Auto Jour—July 20, 1907. No. 85978 A.

**Tax-Free Alcohol.** Albert P. Sy. A short review of the alcohol industry, giving the text of the new law removing the internal revenue tax on grain alcohol. 4000 w. Jour Fr Inst—Jan., 1907. No. 81905 D.

**Alcohol as a Motor Fuel.** A. J. McKinney. Briefly considers the advantages and claims as a fuel. 1700 w. Autocar—Oct. 27, 1906. No. 80294 A.

**Alcohol Engines as a Future Power.** Elihu Thomson. Explains the fitness of alcohol for power purposes, showing that its properties and the conditions of use are favorable to its employment. 2000 w. Elec Wld—Jan. 5, 1907. No. 81499.

**Alcohol for Power.** John A. Secor. Reviews the present status of alcohol as a fuel for internal combustion engines. 4000 w. Mach, N Y—June, 1907. No. 84687 C.

**The Use of Alcohol in Combustion Engines.** R. E. Mathot. Considers the development of alcohol engines; the properties of alcohol as a fuel; its advantages and applications. Ills. 3000 w. Engr, U S A—Feb. 1, 1907. No. 82102 C.

**Alcohol Engines to Replace Gasoline Engines.** John Preston. Remarks on some of the advantages of denatured alcohol and some of the differences between the behavior of an engine when running on gasoline and its action with alcohol. 1000 w. Sci Am—May 11, 1907. No. 84327.

**Does Alcohol Attack Metallic Surfaces?** G. Lessard. Trans. from *La Vie Automobile*. An examination of the effect of alcohol, and the effect of impurities contained in it. 1200 w. Automobile—Aug. 29, 1907. No. 86653.

**Tests of Internal-Combustion Engines on Alcohol Fuel.** Charles Edward Lucke and S. M. Woodward. A report of researches made to determine whether the gasoline and kerosene engines at present on the American market can run on alcohol as fuel; and what improvements might be desirable in the design of engines manufactured especially for alcohol. Ills. 31200 w. U S Dept of Agri, Bul. 191—Sept. 14, 1907. No. 87285 N.

**The Use of Alcohol and Gasoline in Farm Engines.** Prof. C. E. Lucke and S. M. Woodward. Discusses the cost of power from different sources, the comparative cost of energy in different fuels, thermal efficiency, adaptability of various types of engines and the first use of al-

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cohol engines in the present number. 4500 w. Sci Am Sup—April 27, 1907. Serial. 1st part. No. 83916.

**Alcohol as Fuel for Farm Engines.** Abstract of a report by the Special Commission, setting forth the conclusions from a series of tests of alcohol and gasoline in small internal combustion engines. 2500 w. Ir Age—Feb. 28, 1907. No. 82652.

**Alcohol for Operating Engines.** Gives a synopsis of an interesting report prepared by Charles E. Lucke and S. M. Woodward, on official tests of internal combustion engines on alcohol fuel. 4500 w. Ir Age—Sept. 26, 1907. No. 87231.

See also Alcohol, under AUTOMOBILES; and Fuels, under COMBUSTION MOTORS.

## Benzine Motors.

See same title under Cylinder Lubrication, under AUTOMOBILES.

## Comparison.

**Internal Combustion Motors and Steam Engines** (Moteurs à Combustion Interne et Machines à Vapeur). R. E. Mathot. A comparison of the two types of prime mover. Comprehensive treatment. Diagrams and tables. 15600 w. Revue de Mécanique—No. 6, Dec. 31, 1906. No. 82319 E + F.

## Crank Shafts.

**The Weakness of Gas-Engine Crank Shafts.** Remarks on the defective designs of gas-engine crank shafts, from an article by J. F. L. Crosland in *Vulcan*. Ills. 900 w. Mech Engr—Feb. 16, 1907. No. 82595 A.

## Cylinders.

**Stresses due to Heat in Hollow Cylinders** (Temperaturspannungen in Hohlzylindern). Rudolph Lorenz. A mathematical discussion of the stresses in gas-engine cylinders due to unequal heating outside and inside. Diagrams. 4000 w. Zeitschr d Ver Deutscher Ing—May 11, 1907. No. 84981 D.

## Efficiency.

**Effect of Size on the Thermal Efficiency of Explosion Motors.** H. L. Callendar. Discusses losses of heat to the cooler walls of the cylinder during ignition and expansion. 3500 w. Mech Engr—May 18, 1907. Serial. 1st part. No. 84623 A.

## Exhaust Gases.

**On the Gases Exhausted from a Petrol Motor.** Prof. B. Hopkinson and L. G. E. Morse. Read before the British Assn. Describes investigations dealing with the conditions under which carbon monoxide is formed in a high-speed internal-combustion motor, and the relation between

# MECHANICAL ENGINEERING

## Fuels

the composition of the exhaust gases, the strength of the mixture, the power developed, and the thermal efficiency. 2500 w. *Engng*—Aug. 9, 1907. No. 86472 A.

On the Gases Exhausted from a Petrol Motor. Prof. B. Hopkinson and L. G. E. Morse. Read before the British Assn., at Leicester. Describes investigations made of the conditions under which carbon monoxide is formed in internal-combustion motors, and related matters. 2500 w. *Elec Engr, Lond*—Oct. 4, 1907. No. 87587 A.

## Fuels.

Alkoethine, a Fuel for Gas Engines. Howard Greene. Describes the Barker-White system, which consists in vaporizing alcohol in a carbureter of the ordinary gasoline type and passing the vapor, mixed with the proper volume of air, through calcium carbide. 1000 w. *Ir Age*—March 21, 1907. No. 83141.

An Alcohol-Acetylene Mixture for Internal-Combustion Engines. Illustrated description of an experimental testing plant for making all kinds of tests with a gasoline engine, with an account of the Barker-White system, where a mixture of acetylene gas and alcohol vapor is produced and used in the engine. 1500 w. *Sci Am*—March 23, 1907. No. 83148.

Gasoline, Kerosene, or Alcohol for Marine Explosive Engines. A. E. Potter. Gives a comparison of the heat values of these fuels, discussing their cost and use. 2500 w. *Sci Am Sup*—Feb. 23, 1907. No. 82581.

Kerosene Used in Gasoline Engines. An illustrated explanation of how changes from one fuel to the other may be made by the use of a common mixing valve or exhaust heated vaporizer. 1000 w. *Engr, U S A*—March 1, 1907. No. 82744 C.

Some Phases of the Fuel Question. Prof. Vivian B. Lewes. Read before the Inst. of Naval Archts. Discusses the advantages of alcohol as a fuel, comparing the relative values of petroleum spirit and alcohol. 2500 w. *Mech Engr*—April 6, 1907. No. 83737 A.

Commercial Aspects of Oil as Fuel for Power Generation. Franz Erich Junge. Considered in competition with other combustibles used in the generation of power, with remarks on its value and quantity of production and general characteristics. 4000 w. *Power*—March, 1907. No. 82654 C.

Technical Aspects of Oil as Fuel. Franz Erich Junge. Discusses liquid fuels, their treatment and the formation of combustible mixtures, with regard to their application in power plants. 3000 w.

## COMBUSTION MOTORS

Power—Oct., 1907. Serial. 1st part. No. 87266 C.

Liquid Fuels and Their Utilization in Combustion Engines, with Special Reference to the Diesel Motor (*Die flüssigen Brennstoffe und ihre Ausnutzung in der Verbrennungskraftmaschine, mit besonderer Berücksichtigung des Dieselmotors*). Karl Kutzbach. Comparison of the relative values of various fuels. Ills. 7800 w. Serial. 2 parts. *Zeitschr d Ver Deutscher Ing*—April 6 and 13, 1907. No. 84140 D.

Vaporization of Liquid Fuels. Charles Edward Lucke. Types of carbureters and vaporizers for gasoline, kerosene, and alcohol are illustrated and described. 4000 w. *Engr, U S A*—June 15, 1907. No. 85091 C.

Liquid Fuel for Internal-Combustion Engines. R. W. A. Brewer. Read before the Soc. of Engrs. Considers the use of heavy and light oils, vaporization, supply, price, etc. 5500 w. *Mech Engr*—Oct. 12, 1907. No. 87827 A.

Investigations on the Application of Tar Oils in the Operation of Diesel Motors (*Versuche über die Verwendung von Teerölen zum Betrieb des Dieselmotors*). Paul Rieppel. Investigations on the values of various oils as fuels for internal-combustion motors, with special reference to tar oils. Curves and Diagrams. 5500 w. *Zeitschr d Ver Deutscher Ing*—April 20, 1907. No. 84145 D.

See also Alcohol, under COMBUSTION MOTORS.

## Furnace Gases.

Some Considerations Affecting the Application of Waste Gases for Power Purposes. F. E. Junge. On the utilization of gas from blast furnaces, the proportion of power gas available from coke ovens, natural gas, best disposition of surplus gases, etc. 6500 w. *Power*—Jan., 1907. No. 81454 C.

The Economical Production of Power from Furnace Gases (*Production Economique de la Force Motrice au Moyen des Gaz Métallurgiques*). Ch. Dantin. Illustrated description of the power plant of the Cockerill Company at Seraing, Belgium, which utilizes coke-oven and blast-furnace gases. 5000 w. *Génie Civil*—June 29, 1907. No. 85618 D.

The Utilization of Blast Furnace Gases for Power Production. Albert L. O. Genter. Shows how the problems of eliminating flue dust from blast furnace gases, and the construction of gas engines large enough to meet the demands of power for a steel plant, were solved. 2500 w. *Min*

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### Gas Analysis

Rept.—June 13, 1907. Serial. 1st part. No. 85082.

The Use of Excess Gas from By-Product Coke Ovens for Light and Power Purposes. C. E. Rhodes. Gives particulars taken from the actual working results of two batteries of ovens, one with horizontal and the other with vertical flues. 1200 w. *Ir & Coal Trds Rev*—June 28, 1907. No. 85507 A.

### Gas Analysis.

The Testing of Inflammable Gases. C. E. Sargent. Illustrates and describes apparatus designed and used by the writer in making efficiency tests of gas engines and in determining the solid matter, moisture, and calorific value of gases. 2000 w. *Pro Am Soc of Mech Engrs*—Dec., 1906. No. 81064.

Gas Analysis with Home-made Pipettes. Harry Spurrier. Directions for making the apparatus, the materials required, and how to prepare it for use. Ills. 2500 w. *Power*—April, 1907. No. 83248 C.

A Commercial Method of Testing Producer Gas for Sulphur. Randolph Bolling. Outlines briefly Bunte's method, and Drehschmidt's method, and gives a description of the writer's method. 900 w. *Eng News*—Aug. 1, 1907. No. 86073.

Rapid and Accurate Gas Analysis. Edwin Barnhart. Illustrates and describes an apparatus giving a high degree of accuracy, and a minimum of time. A complete analysis of coal or producer gas requires about twenty minutes. 1200 w. *Elec-Chem & Met Ind*—Sept., 1907. No. 86835 C.

See also Calorimeters, under MEASUREMENT.

### Gas Cleaning.

A Stationary Centrifugal Gas Washer. Illustrated description of the Bachman washer, which cleans gas in the same way the Stratton steam separator removes water from steam. 1000 w. *Ir Age*—April 11, 1907. No. 83557.

Characteristics of Some Power Gases and Their Treatment. L. L. Brewer. Considers the impurities, methods of cleaning the gas, etc. 4000 w. *Power*—Dec., 1906. No. 81004 C.

Gas Engines. Informal discussion of what is the best apparatus and most economical system for cleaning producer or furnace gas to be used in gas engines; and to what extent ordinary producer gas is used in gas engines, and the results obtained by removing tar or soot. 3500 w. *Pro Am Soc of Civ Engrs*—Aug., 1907. No. 86646 E.

### COMBUSTION MOTORS

### Gas Engines

Gas Engines. Informal discussion on the best system for cleaning gas to be used in gas engines. Ills. 4000 w. *Pro Am Soc of Civ Engrs*—Sept., 1907. No. 87713 E.

### Gas Engineering.

Gas Engineering. W. A. Bachr. Shows that a gas engineer needs to have civil, mechanical, electrical, and chemical knowledge. Considers the manufacture of artificial gases and their distribution. 8800 w. *Jour Assn of Engng Socs*—May, 1907. No. 85141 C.

### Gas Engines.

An Historical Sketch of the Gas Engine. John Hays Hammond, Jr. Brief review of the early history and development, and its application for motive power of automobiles. 2000 w. *Yale Sci M*—Jan., 1907. No. 82032 C.

The Evolution of Gas Power. Discussion of paper by F. E. Junge. 5000 w. *Pro Am Soc of Mech Engrs*—Feb., 1907. No. 82503 F.

History of the Progress of the Gas Engine. E. J. Williams. Reviews interesting inventions in this field since 1678, showing the development. 2500 w. *Rudder*—June, 1907. No. 84732 C.

A Historical Review of Gas-Engine Construction (Geschichtlicher Rückblick im Gasmotorenbau). A sketch of the development of the gas engine during the past fifty years. 2000 w. *Elektrotech u Polytech Rundschau*—May 22, 1907. No. 84952 D.

The Evolution of Gas Power. F. E. Junge. A review of the history of development of internal combustion engines, discussing types and improvements in design and construction, methods of regulation, etc., fuels used and other problems. 10000 w. *Pro Am Soc of Mech Engrs*—Nov. 1906. No. 80510 C.

The Gas-power Situation in America. F. E. Junge. Gives a short résumé of the growth and extent of power application in the United States, and a discussion of the gas-power situation from the viewpoint of a foreign observer of American industrial conditions. 2200 w. *Power*—June, 1907. No. 84654 C.

The Design of Modern Producers and Gas Engines. R. E. Mathot. Presents in the present article the general principles of construction considered as the best practice. 3000 w. *Engineering Magazine*—June, 1907. No. 84198 B.

Producer Gas Engine. F. W. Burger. Calls attention to points to be considered in designing this type of engine. 2000 w. *Engr, U S A*—Aug. 1, 1907. No. 86134 C.



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## Gas Engines

Progress and Experience in the Construction of Large Gas-Engines. H. Bonte. (Abstract.) Deals with structural details, the operation, the relation between the power and dimensions, their application, etc. Ills. 4000 w. Engng—Nov. 2, 1906. No. 80360 A.

Gas-Engine Types. Jonas F. King. Gives considerations regarding the various systems, based on the findings of a commission of engineers appointed to examine carefully the whole subject of gas engines. 2000 w. Power—Dec., 1906. No. 81000 C.

The Two vs. the Four-Stroke Cycle Gas Engine. Louis Illmer, Jr. A discussion favoring the two-stroke cycle engine and recommending independent air and gas pumps. 3500 w. Engr, U S A—May 15, 1907. No. 84408 C.

Some Notes on Gas Engines. Prof. H. Diederichs, in *Sibley Jour. of Engng.* Discusses some of the interesting tests and treatises that have appeared in German literature, with data observed by the writer. 19800 w. Jour Am Soc of Nav Engrs—May, 1907. No. 85762 H.

Experiments to Determine the Conditions in a Gas Engine Cylinder. Abstract of a paper by Dugald Clerk, on the phenomena of the working fluid in the cylinder of the internal-combustion engine. Presented to the Royal Society. 2500 w. Eng Rec—Nov 17, 1906. No. 80505.

Researches on the Influence of Mixture Ratio on Gas-Engine Operation (Versuche an der Gasmaschine über den Einfluss des Mischungsverhältnisses). A. Nägel. Illustrates and describes tests made on an 8 horse-power Körting engine and gives results. 13000 w. Serial. 2 parts. Zeitschr d Ver Deutscher Ing—Sept. 7 and 14, 1907. No. 87648, each D.

The Present Position of Gas and Petrol Engines. Dugald Clerk. Read before the British Assn. Considers the difficulties in constructing large gas engines, describes experiments with the object of compounding gas engines and concludes with a few general remarks on petrol engines. 4000 w. Elect'n, Lond—Aug. 9, 1907. No. 86463 A.

Pressures and Work in a Gas Engine. Cecil P. Poole. Gives formulæ for pressures developed by compression, combustion, and expansion; work, horse-power, and mean effective pressure. 2000 w. Power—Sept., 1907. No. 86676 C.

Coal Gas for Motive Power and Heating. Dugald Clerk. Advocates the gas engine, driven by town gas, giving information in regard to its efficiency and cost

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of operation as compared with various fuels. 4000 w. Gas Wld—Nov. 10, 1906. No. 80463 A.

The Selection of a Gas Engine. A. S. Atkinson. Discusses some points in regard to the selection of power boats and the kind of engines most suited for them. 2200 w. Rudder—Jan., 1907. No. 81371 C.

Gas-Engine Practice. A discussion of the papers by Prof. H. Hubert, Mr. Tom Westgarth, and Mr. K. Reinhardt. 5000 w. Bul Am Inst of Min Engrs—Jan., 1907. No. 82514.

Practical Data from Modern Gas Engines. L. L. Brewer. Information concerning fuel, water and oil consumption of representative types and their weight and space requirements. 2000 w. Power—April, 1907. No. 83245 C.

Gas, Gas Engines, and Gas Producers. J. Seton Gray. Points out the merits of the gas producer, comparing steam and producer plants. Ills. 4200 w. Can Soc of Civ Engrs—Feb. 28, 1907. No. 83032 N.

Gas versus Steam. Louis Illmer, Jr. A comparison of the efficiency, economy and general advantages. 2500 w. Engr, U S A—April 15, 1907. No. 83777 C.

Gas-Engine Efficiencies. Leonard Birstow. Considers methods of making the calculations, giving tables. 1400 w. Engng—June 7, 1907. No. 85111 A.

Working Experiences with Large Gas Engines. Cecil A. St. George Moore. Shows some of the defects which have presented themselves in actual work, and by what means and to what extent they have been overcome. 6500 w. Soc of Engrs—June 3, 1907. No. 85120 N.

Gas Engine Troubles and How to Overcome Them (Schwierigkeiten im Betriebe der Gasmaschinen und ihre Beseitigung). Fritz Sellge. Describes valve and spark troubles and remedies for them. Ills. 4000 w. Stahl und Eisen—Feb. 13, 1907. No. 82952 D.

The Dangers of Gas Engines and Methods of Starting (Sui Pericoli dei Motori a Gas ed i Mezzi d'Avviamento). Francesco Massarelli. Discusses the dangers of self-starting engines and the advantages of using compressed air. Ill. Serial. 1st part. 2800 w. L'Industria—March 17, 1907. No. 83680 D.

Gas Engine Breakdowns. Michael Longridge. From the annual report to the British Engine and Boiler Insurance Company. 5000 w. Mech Engr—Aug. 31, 1907. No. 86858 A.

Scope for the Use of Large Gas-Engines for Generating Electric Power in

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## Gas Engines

England. Leonard Andrews. Brief discussion giving capital and running cost. 1500 w. Elec Engr, Lond—Oct. 18, 1907. No. 87953 A.

Large Gas Engines. H. A. Humphrey. Second lecture at Olympia. Considers types and some of their characteristics. 3500 w. Jour Gas Lgt—Oct. 23, 1906. No. 80288 A.

Large Size Gas Engines on the Continent. Dr. Alfred Gradenwitz. Discusses their adaptation to iron works and collieries. Ills. 2800 w. Engr, U S A—Feb. 15, 1907. No. 82433 C.

Körting Gas-Engines at the Shelton Iron Works, Stoke. An account of these works and their output, with a description of the gas-engines installed, which are run with coke-oven gas. Ills. 2700 w. Engng—Feb. 15, 1907. No. 82607 A.

Novelties in Large Gas Engines (Neuerungen an Grossgasmaschinen). Herr v. Hansdorff. Relates principally to the two-cycle Körting engines produced by Pokorny and Wittekind of Frankfurt. Ills. 4000 w. Zeitschr d Ver Deutscher Ing—Aug. 17, 1907. No. 86985 D.

A Portable Engine Worked on Suction Gas. Illustrates and describes an interesting application of the suction gas producer plant, made in Germany. 500 w. Engr, Lond—Jan. 18, 1907. No. 81995 A.

A New Vertical Internal Combustion Engine. Illustrations and short description of an engine recently patented in England. 700 w. Mech Engr—March 16, 1907. No. 83262 A.

The Buffalo Gas Engines. Illustrates and describes these single-acting tandem gas engines. 2000 w. Power—Feb., 1907. No. 82013 C.

1200-Horse-Power Four-Cylinder Gas-Engine. Illustrated description of a gas-engine recently built in England, for direct coupling to a large continuous-current generator. 1000 w. Engng—Jan. 11, 1907. No. 81748 A.

The Providence Gas Engines and Producers. Illustrated description of a horizontal gas engine adapted for operating on gases of low heat value, and of the suction gas producer. 1200 w. Ir Age—March 14, 1907. No. 83009.

Two New Gas Engines. Gives illustrated descriptions of a double-cylinder single-acting engine, and a four-cylinder vertical engine made in Manchester, England. 1000 w. Engr, Lond—Feb. 22, 1907. No. 82842 A.

Hurd & Haggin Marine and Railway Engine. Illustrated description of a new marine and railway gas engine exhibited

## COMBUSTION MOTORS

## Gas Engines

at the last Motor Boat Exhibition in New York. 1300 w. Mach, N Y—April, 1907. No. 83391 C.

600 B.H.P. Horizontal Twin Cylinder Gas Engine. Illustrates and describes a gas engine constructed for driving a ring spinning mill. 2200 w. Mech Engr—June 15, 1907. No. 85236 A.

1200-Horse-Power Gas Engine. Illustrated detailed description of a large engine running in the power house at Bargoed, near Cardiff, which is driving an alternator in parallel with other engines. 600 w. Engr, Lond—May 24, 1907. No. 84762 A.

A New Line of Horizontal Engines. Illustrates and describes single cylinders, twin cylinders and cylinders arranged in tandem. 1200 w. Engr, U S A—July 1, 1907. No. 85374 C.

Roots Two-Stroke Cycle. Internal-Combustion Engine. Sectional elevations and description of a new engine patented by J. D. Roots, London. 1500 w. Mech Engr—July 13, 1907. No. 85859 A.

A Notable Tod Gas Engine. Brief illustrated description of an engine installed at the Youngstown, O., works of the Carnegie Steel Company. 800 w. Ir Age—July 18, 1907. No. 85728.

Producer Gas Engines. G. W. Bissell. Abstract of a paper read before the Iowa Elec. Assn. A report and comparison of tests made. 800 w. Elec Ry Rev—May 11, 1907. No. 84280.

Power from Producer Gas. G. W. Munro. Describes a producer gas engine plant, and gives a report of its efficiency and performance. 3000 w. Purdue Engng Rev—1907. No. 85937 N.

The Gas Power Plant of the Norton Company. An illustrated general outline of the plant, with report of its performance under every-day conditions. 1500 w. Power—July, 1907. No. 85343 C.

A Mammoth Alternating-Current Gas Engine Railway Plant. Describes a San Francisco plant where twin tandem, double-acting engines operating on crude oil water gas are installed. Ills. 1500 w. Engr, U S A—July 15, 1907. No. 85557 C.

How to Build a 5-Horse-Power Stationary Gas Engine. E. F. Lake. Drawings and directions. 3000 w. Sci Am Sup—June 15, 1907. Serial. 1st part. No. 85018.

See also Comparison, Crank Shafts, Cylinders, Furnace Gases, Gas Analysis, Gas Cleaning, Gas Power Plants, Governing, Ignition, Indicators, Lubrication, Natural Gas, Rating and Suction Gas, under COMBUSTION MOTORS; Pumping Plants.

## MECHANICAL ENGINEERING

### Gas Engine Testing

under HYDRAULICS; Air Compressors and Costs, under POWER AND TRANSMISSION; Exhibitions, under INDUSTRIAL ECONOMY; and Combustion Motors and Gas Engines, under MARINE AND NAVAL ENGINEERING.

### Gas Engine Testing.

Rules for the Testing of Gas Engines and Gas Producers (Regeln für Leistungsversuche an Gasmaschinen und Gaserzeugern). Regulations proposed by the Society of German Engineers, Society of German Engine Builders and Society of Large Gas Engine Manufacturers, in 1906. 6000 w. Zeitschr d Ver Deutscher Ing—Nov. 24, 1906. No. 81148 D.

The Testing of Large Gas Engines (Ueber Grossgasmaschinen und ihre Untersuchungen). Discusses the indicator diagram of the gas engine, and methods and appliances for testing, gas calorimeters and gas-analysis apparatus, with full calculations of actual tests. Ills. 5000 w. Glückauf—July 13, 1907. No. 86235 D.

### Gas Holders.

See same title, under CIVIL ENGINEERING, CONSTRUCTION.

### Gasoline Engines.

A Comparison of Four-Cycle Gasoline Engines as Used in Automobile Service. E. J. Bartlett. Considers types of engines used, showing graphically the arrangement of the reciprocating and revolving parts and the relative steadiness of the power developed by each type. Ills. 2800 w. Am Mach—Vol. 29. No. 52. No. 81267.

Some Tests of a Petrol-Engine. H. Topham and H. G. Tisdall. A report of tests made to determine the relation between the rate of consumption of petrol per brake h.-p. in the engine and the character of the spark used for igniting the cylinder mixture. 2000 w. Engng—Dec. 28, 1906. No. 81539 A.

Efficiency Tests on a High-Speed Petrol Motor. B. Hopkinson. Describes tests made on a high-speed petrol motor for efficiency, using a new type of indicator which gives correct diagrams at high speeds. 3500 w. Engng—Feb. 8, 1907. No. 82464 A.

Offset Cylinders in Gasoline Engines. E. J. Bartlett. A technical discussion of the conditions and the method of evening the pressure by offsetting the center of the cylinder from that of the crank-shaft so that the angle of the connecting-rod is unequal during the two strokes. 1500 w. Am Mach—Vol. 30, No. 20. No. 84376.

Light-Weight Gasoline Motors for

### COMBUSTION MOTORS

Aeronautical Work. Illustrated description of the new Levavasseur motor. 1500 w. Sci Am Sup—Nov. 24, 1906. No. 80594.

See also Exhaust Gases, Fuels, Gas Engines, Ignition, Indicators, Lubrication and Rating, under COMBUSTION MOTORS; Pumping Plants, under HYDRAULICS; Costs, under POWER AND TRANSMISSION; and Combustion Motors, under MARINE AND NAVAL ENGINEERING.

### Gas Power Plants.

Large Gas Power Plants. C. E. Douglas. Abstract of a paper read before the Manchester Sec. of the Inst. of Elec. Engrs. Discusses the suitability or otherwise of gas plants for works requiring from 200 to 1,500 b. h.p., their reliability and economy. 4500 w. Ir & Coal Trds Rev—Jan. 25, 1907. No. 82158 A.

Mains and Fittings for Gas-power Plants. L. L. Brewer. Considers the proper design of mains, special fittings, and related subjects. 2000 w. Power—Sept., 1907. No. 86670 C.

The Modern Gas Engine Power Plant (Die Moderne Gasmaschinenzentrale). M. Langer. Discusses the fundamental considerations in the design of a gas-engine power plant, with particular reference to plants for the utilization of the waste gases in ironworks. 5000 w. Stahl u Eisen—Aug. 14, 1907. No. 86933 D.

Gas Power Plants (Ueber Kraftgasanlagen). R. Schöttler. Illustrated discussion of gas power in general, producers, blast-furnace gas and gas engines. Serial. 2 parts. 5500 w. Elektrotech Zeitschr—Nov. 29 and Dec. 6, 1906. No. 81159 each B.

Producer Gas Power Plant. J. R. Bibbins. An inquiry into the operation, efficiency, and construction of a typical modern industrial plant—the plant serving the entire Gould manufacturing properties at Depew, N. Y. Ills. 4000 w. Pro Am Soc of Mech Engrs—Nov., 1906. No. 80520 C.

A New Producer Gas Plant. Illustrated description of a plant installed in a Chicago factory. 1500 w. Engr, U S A—May 1, 1907. No. 84037 C.

See also Gas Engines and Gas Producers, under COMBUSTION MOTORS.

### Gas Producers.

General Principles in the Construction of Modern Gas Producers. R. E. Mathot. Discusses the elements of producer design, considering, particularly, producers operated with anthracite, semi-anthracite, or coke. Ills. 5000 w. Engineering Magazine—July, 1907. No. 85306 B.

# MECHANICAL ENGINEERING

## Gas Producers

Gas Generation and the Development of Producer Plants (Ueber Gaserzeugung und die Entwicklung der Generatorgasanlagen). J. Schmidt. A history of the generation of gas for lighting and power purposes from 1867 to the present time. Ills. 2500 w. Serial. 1st part. Elektrotech u Polytech Rundschau—Aug. 14, 1907. No. 86964 D.

Gas Producers (Ueber Gasgeneratoren). Johannes Körting. A thorough review of the subject, describing the construction and operation of many types of producers and giving tables of the results obtained from them. Ill. Diagrams and Tables. 14000 w. Stahl u Eisen—May 15, 1907. No. 84939 D.

Gas Producers (Ueber Gasgeneratoren). Discussion of Johannes Körting's paper before the Verein Deutscher Eisenhüttenleute and reprinted in *Stahl und Eisen* for May 15, 1907. Ills. 4500 w. Stahl u Eisen—June 5, 1907. No. 85625 D.

The Operation of Lean-Gas Producers (Représentation du Fonctionnement des Gazogènes à Gaz Pauvres). H. Sire de Vilar. Mathematical and graphical discussion; with examination of results of several different experimenters. 1 plate. 3500 w. Mem Soc Ing Civ de France—Oct., 1906. No. 81126 G.

Gas as a Source of Power. Willard L. Case, in *Jour. of Soc. of Chem. Ind.* Gives facts from authoritative sources concerning the generation of producer, Mond, and blast-furnace gases. 3500 w. Sci Am Sup—Dec. 15, 1906. Serial. 1st part. No. 80981.

A New Type of Pressure Producer. Illustrated description of type F Westinghouse producer, with no gas holder, the gas supply being regulated by throttling the steam blast. 1200 w. Engr, U S A—Aug. 15, 1907. No. 86413 C.

Gas Producer for Pulverized Fuel (Gazogène à Combustible Pulvérisé). An illustrated description of the Marconnet producer which is charged continuously with pulverized fuel and which is said to utilize anthracite or bituminous coal, or even bituminous shale with equal facility. 1600 w. Génie Civil—May 11, 1907. No. 84909 D.

Recent Progress in Producer Gas Power Installations. Godfrey M. S. Tait. Illustrates and describes a producer gas installation in which variation in the gas is avoided so far as possible. 2000 w. Sci Am Sup—June 22, 1907. No. 85163.

Equations and Diagrams of the Operations in the Gas Producer (Gleichungen und Diagramme zu den Vorgängen im Gasgenerator). R. Mollier. Mathematical

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and graphical representations of the operation and products of a gas producer under various working conditions of air and water supply. Diagrams. 3600 w. Zeitschr d Ver Deutscher Ing—April 6, 1907. No. 84141 D.

Discussion of the Theoretical Performance of Coke Gas Producers (Représentation du Fonctionnement Théorique des Gazogènes au Coke). Rodolphe Soreau. A mathematical explanation of simple means for making calculations in gas producer practice, including composition of gas, calorific power of gas, thermal efficiency of the producer, etc. 3000 w. Mem Soc Ing Civ d France—May, 1907. No. 85602 G.

The Utilization of Low Grade Fuel in Gas Producers. F. E. Junge. Discusses the preservation of the fuel supply, the economic features of fuel utilization, the gasification of fuels, and related subjects. 4000 w. Ir Trd Rev—April 4, 1907. Serial. 1st part. No. 83474.

The Rational Utilization of Low Grade Fuels. F. E. Junge. Discusses how to use inferior coals most efficiently, with special consideration of the application of gas producers. 9800 w. Pro Am Soc of Mech Engrs—Oct., 1907. No. 87883 C.

Recent Improvements in the Utilization of Coal. Marius R. Campbell. Discusses recent improvements, especially the utilization of soft coal, lignite and peat in the manufacture of producer gas for power purposes, giving the results of fuel-tests made at St. Louis. 1700 w. Ec Geol—June, 1907. No. 85189 D.

Notes on the Utilization of Poor Coals and Slack. D. B. Dowling. Shows that even the poorest lignite has, as a gas producer, a value equal in power production to that of a good steam coal when used in the steam plant. Discussion. 3000 w. Jour Can Min Inst—1906. No. 83820 N.

Steam in Gas Producer Practice. William Arthur Bone. Read before the Ir. & St. Inst. A record of experiments made to determine the influence of variation in the proportions of air and steam in the blast upon the composition of the blast, its suitability for furnace operations, and upon the thermal efficiencies of the producers. 7500 w. Engng—May 17, 1907. No. 84581 A.

See also Gas Power Plants, Producer Plants and Suction Gas, under COMBUSTION MOTORS.

## Gas Turbines.

Gas Turbines. Frank Foster. Discusses some of the problems that must be solved before a reliable internal-combustion turbine can be made. Ills. 3000

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## Gas Turbines

w. Mech Engr—Dec. 8, 1906. Serial. 1st part. No. 81021 A.

The Gas Turbine. René Armengaud. An illustrated discussion of these continuous combustion motors, giving practical results with actual operative machines in France. 3000 w. Cassier's Mag—Jan., 1907. No. 81781 B.

The Gas Turbine for Automobile Propulsion. W. H. Stuart-Garnett. A discussion of the problems to be solved in connection with combustion turbines, the progress made, and the possibilities of their application for the use named. 3000 w. Cassier's Mag—March, 1907. No. 83029 B.

New Gas Turbine and Centrifugal Air Compressor. Illustrations and information in regard to a new machine on trial in Paris. 1400 w. Sci Am Sup—Oct. 12, 1907. No. 87557.

Gas Turbines (Les Turbines à Gaz). F. Naive. General details of gas turbine design, their operation, applications, etc. Ill. 2400 w. L'Alliance Industrielle—April, 1907. No. 83686 D.

The Gas Turbine (Le Turbine à Gas). Giuseppe Belluzzo. A general review of theory and practice. Ills. 1500 w. Serial. 1st part. L'Industria—April 28, 1907. No. 84122 D.

On the Problems of the Gas Turbine (Zur Frage der Gasturbine). Felix Langen. A practical discussion of various points in gas turbine operation. 1600 w. Serial. 1st part. Zeitschr f d Gesamte Turbinenwesen—April 10, 1907. No. 84158 D.

## Governing.

Crossley's Governing Device for Internal-Combustion Engines. Brief illustrated description of an ingenious device for controlling the gas valve with a view to varying the power of the impulses to suit the load on the engine. 1000 w. Mech Engr—Feb. 2, 1907. No. 82238 A.

Speed Regulation of Internal Combustion Engines. Explains the method of governing in use on the Diesel crude oil engine. 1500 w. Engr, U S A—Oct. 1, 1907. No. 87327 C.

## Ideal Engine.

The Ideal Internal-Combustion Engine. E. N. Percy. Outlines an engine embodying the best points of long-tried engines. 1400 w. Power—July, 1907. No. 85342 C.

## Ignition.

Electrical Ignition in Internal Combustion Engines. F. W. Springer. A review of the writer's investigations to determine the most advantageous features to be em-

## COMBUSTION MOTORS

## Ignition

bodied in the construction of apparatus for this purpose. 2500 w. Elec Wld—Nov. 24, 1906. Serial. 1st part. No. 80590.

Electric Ignition for Two-Cylinder Motors (Die elektrische Zündung be Zweizylinder-Motoren). Josef Löwy. Various arrangements of ignition apparatus compared and discussed. Ills. 1300 w. Elektrotechnik und Maschinenbau—Dec. 16, 1906. No. 81827 D.

High-Tension Electric Ignition for Petrol Engines. John A. Davenport. A report of a series of experiments carried out at East London College laboratory, giving results and describing apparatus. 2000 w. Engng—Feb. 22, 1907. No. 82833 A.

Electric Ignition in Gas and Gasoline Engines (Noté sur l'Allumage Electrique des Moteurs à Gaz et à Pétrole). H. Lhonoré. The first part of the serial deals with low-tension ignition, illustrating and describing numerous types of magneto. 1200 w. Serial. 1st part. Revue de Mécanique—May 31, 1907. No. 84994 E + F.

Gas-Engine Ignition. R. H. Coombs. The present article considers primary batteries, wet and dry; the dynamo and magneto; and the storage battery. 4500 w. Rudder—Jan., 1907. Serial. 1st part. No. 81372 C.

Some Facts Pertaining to Electrical Ignition. Henry G. Chatain. Extract from a paper read before the Soc. of Auto. Engrs., N. Y. Describes tests made to determine the most favorable operating conditions of a Simms-Bosch low-tension magneto. Also gives tests of some high-tension coils. Diagrams. 1200 w. Automobile—July 18, 1907. No. 85768.

Contact Method of Gas Engine Ignition. E. J. Edwards. Mathematical discussion of the design of a sparking equipment. 1500 w. Elec Wld—Oct. 19, 1907. No. 87805.

Ignition. R. H. Coombs. The first of a series of articles dealing with the average troubles, and their cause, in modern ignition outfits. 2000 w. Rudder—Dec., 1906. Serial. 1st part. No. 80878 C.

Effect of Ignition on the Power of an Engine. W. Watson. Abstract of a paper read before the A. C. G. B. I. Gives a record of measurements made by the writer. 1700 w. Auto Jour—March 2, 1907. No. 82882 A.

Bradley's Ignition Device. Illustrates and describes an ignition device for internal-combustion engines, aiming to secure efficient work at high speeds, and capable

## MECHANICAL ENGINEERING

### Indicator Diagrams

of giving but a single spark. 1000 w. *Mech Engr*—Aug. 19, 1907. No. 86454 A.

Eisemann H. T. Magneto Ignition Systems. An illustrated description of the wiring system of this device. 1800 w. *Autocar*—Aug. 10, 1907. No. 86450 A.

### Indicator Diagrams.

Recreative Reading of Diagrams. L. Baudry de Saunier. Especially interprets the diagrams of automobile gas engines. 1500 w. *Automobile*—June 13, 1907. No. 85033.

New Gas Engine Diagrams. Frank Foster. Describes the construction and use of a modified diagram for reciprocating gas-engine problems, and also a new temperature-pressure diagram for general gas engine problems. 2000 w. *Engr, Lond*—Feb. 22, 1907. No. 82838 A.

Indicator Diagrams from a Canadian Crude-oil Engine. H. Addison Johnston. Briefly describes the Johnston crude-oil engine and examines indicator diagrams taken. 900 w. *Power*—Sept., 1907. No. 86669 C.

### Indicators.

A New French Optical High-Speed Gas-Engine Indicator. Brief illustrated description of an interesting indicator for extremely high speeds. 500 w. *Am Mach*—Vol. 29. No. 48. No. 80761.

Petrol Engine Indicating. Illustration and particulars concerning the Schulze monograph and its use. 1500 w. *Autocar*—Feb. 2, 1907. No. 82236 A.

The Schultze Manograph for Taking Indicator Cards of Gasoline Engines. Illustrated description of an instrument designed to give an accurate diagram of the pressure obtained in the cylinder of an internal-combustion engine. 1200 w. *Sci Am Sup*—March 23, 1907. No. 83156.

### Losses.

Thermal and Power Losses in Internal-Combustion Engines. A. H. Burnand. Describes experimental investigations made. 3000 w. *Engng*—Oct. 4, 1907. Serial. 1st part. No. 87592 A.

### Lubrication.

Lubrication Systems for Gas Engines. Herbert L. Towle. An illustrated discussion of methods of feeding the oil and a description of lubricators for automobiles and power boats. 5000 w. *Rudder*—Dec., 1906. No. 80877 C.

The Lubrication of Petrol Engines. J. Veitch Wilson. Refers to an article by H. O. Duncan, explaining points with which the writer fails to agree, and stating his views in regard to lubricants

### COMBUSTION MOTORS

3000 w. *Autocar*—Dec. 8 and 15, 1906. Serial. 2 parts. No. 81231 each A.

The Lubrication of Petrol Engines. J. Veitch Wilson. Deals with the various methods adopted for the application of lubricants and adaptability of the lubricants to these different methods. 1300 w. *Autocar*—July 6, 1907. Serial. 1st part. No. 85578 A.

See also Pistons, under COMBUSTION MOTORS.

### Marine Engines.

Explosive-Mixture Motors. A. B. Willits. Remarks on the possibility of applying explosive mixture motors to sea-going craft, and some of the objectionable features of steam installations that would disappear. Illustrates and describes present motor designs, and discusses the fuel question. 111s. 7800 w. *Jour Am Soc of Nav Engrs*—Nov., 1906. No. 81279 H.

Explosive Engines for Naval Purposes. Arthur T. Chester. Read before the Soc. of Nav. Archts. & Marine Engrs. Considers the advantages and disadvantages of these engines as applied to a man-of-war, comparing their merits with high-pressure modern steam plants. 4000 w. *Naut Gaz*—Jan. 17, 1907. No. 81716.

See also Oil Engines, under COMBUSTION MOTORS; and Combustion Motors and Gas Engines, under MARINE AND NAVAL ENGINEERING.

### Natural Gas.

Natural Gas Plant of Art Metal Construction Co. Illustrated description of a power plant at Jamestown, N. Y., having two twin and one large tandem unit, the latter controlled by a flywheel governor, all running on natural gas. 3000 w. *Engr, U S A*—July 15, 1907. No. 85558 C.

### Oil Engines.

Oil Engines. S. M. Howell. General discussion with illustrated descriptions of types. 2000 w. *Mach, N Y*—Aug., 1907. No. 86143 C.

The Design of a Two-Cycle, Reversible Diesel Motor (Metodo di Calcolo di un Motore "Diesel" a due Tempi, Reversibile). Alessandro Guidoni. A concrete example, fully worked out, of the method of designing Diesel motors for marine service. 111s. 6000 w. *Rivista Marittima*—July-Aug., 1907. No. 86215 E + F.

Progress in Oil Engines. E. F. Lake. Discusses wherein the oil engine excels the gasoline, its cost of operation and progress. 111s. 2500 w. *Engr, U S A*—Aug. 15, 1907. No. 86412 C.

Oil Engine for Marine Purposes. F. M.

## MECHANICAL ENGINEERING

### Oil Engines

Timpson. Read before the Inst. of Marine Engrs. Describes oil engines, and gives information in regard to applications, especially for marine purposes. 3000 w. *Marine Rev*—Aug. 1, 1907. No. 86124.

Pumping with Oil-Engines in India. Editorial on the experiments carried out by the Government of Madras to ascertain the actual cost of raising water under different conditions. 1800 w. *Engng*—Sept. 20, 1907. No. 87344 A.

Novel High Compression Oil Engine. Alfred Gradenwitz. An illustrated detailed description of the Trinklér motor. 1000 w. *Mach*, N Y—Sept., 1907. No. 86748 C.

The Cross Patent Heavy Oil Engine. Illustrated description of an engine designed for use with petroleum. 1600 w. *Autocar*—June 8, 1907. No. 85094 A.

The De La Vergne Oil Engine. Illustrated description of a new engine claiming absolute safety, reliability, economy, high speed, small space and light weight. 1500 w. *Ir Age*—Sept. 26, 1907. No. 87228.

The Koerting 200-Horse-Power Valveless Two-Cycle Petroleum Engine for Submarine Boats. Describes this interesting internal-combustion motor, illustrating the testing-shop, and details of the engine. 1000 w. *Sci Am Sup*—Nov. 10, 1906. No. 80275.

A Large Oil Engine Plant. Oil engines run in parallel on a power and lighting load at the works of the Ball Bro.'s Glass Mfg. Co., Muncie, Ind. Ills. 2500 w. *Engr*, U S A—July 15, 1907. No. 85561 C.

See also Fuels, under COMBUSTION MOTORS; Pumping Plants, under HYDRAULICS; and Combustion Motors and Motor Boats, under MARINE AND NAVAL ENGINEERING.

### Pistons.

Pistons for Internal Combustion Engines. H. S. Brown. Discusses the conditions to be considered in designing such pistons, their lubrication, and related matters. Ills. 1800 w. *Ir Age*—Dec. 27, 1906. No. 81260.

### Producer Plants.

The Pressure Producer Gas Plant. Illustrates and describes the principal features. 1400 w. *Ry & Engng Rev*—Jan. 5, 1907. No. 81468.

Producer Plant of the John Thompson Press Co. Godfrey M. S. Iait. This plant in Long Island City, N. Y., is illustrated and described in detail. 2000 w. *Engr*, U S A—July 15, 1907. No. 85559 C.

Producer Gas Plant in Newark, N. J.

### COMBUSTION MOTORS

Edward J. Kunze. Illustrates and describes a plant in which the same gas generated for feeding gas engines is made also to serve the burners of the annealing furnaces of a jewelry factory. 2000 w. *Engr*, U S A—Aug. 15, 1907. No. 86411 C.

Producer Plant for Lighting and Electric Drive. Illustrated description of a power plant of three vertical engines fed from one producer. 1500 w. *Engr*, U S A—Aug. 1, 1907. No. 86133 C.

See also Gas Producers and Suction Gas, under COMBUSTION MOTORS.

### Rating.

Some Notes on the H. P. of Petrol Motors. Prof. J. Blacklock Henderson. Deals with scientific principles underlying the calculation of the power. 2000 w. *Autocar*—Dec. 15, 1906. No. 81232 A.

Predetermination of Maximum Motor Power. R. Arnoux. Trans. from *Bul. Off. de la Com. Tech.* Discusses methods of determining as accurately as possible the influence of the factors that limit the maximum power output of the internal combustion motor. 3500 w. *Automobile*—Jan. 10, 1907. Serial. 1st part. No. 81617.

The Horse-Power of the Petrol Motor. F. W. Lanchester. Read before the Inst. of Auto. Engrs. Discusses its relation to bore, stroke, and weight, the argument being based on the dimensional theory. 4000 w. *Autocar*—April 20, 1907. Serial. 1st part. No. 83986 A.

Horse-Power Rating of Gas Engines. Henry C. Hart. Explains a method of calculating the horse-power of any given engine. 1800 w. *Gas Engrs' Mag*—Aug. 15, 1907. No. 86620 A.

### Silencer.

Kennedy's Silencer for Internal-Combustion Engines. Illustrates several forms of a device for cooling and silencing the exhaust gases. 800 w. *Mech Engr*—Feb. 2, 1907. No. 82239 A.

### Spark Coils.

The Care and Use of Spark Coils. E. Q. Williams. Brief suggestions for avoiding troubles with spark coils. The necessity of keeping everything clean and dry. 800 w. *Sci Am*—Dec. 8, 1906. No. 80880.

### Suction Gas.

An Interesting Suction Gas Producer Plant. Illustrated description of anthracite producers installed in a factory in Cleveland, O., for which the exhaust of the engine is utilized in making steam.

## MECHANICAL ENGINEERING

### Suction Gas

2200 w. Engr, U S A—July 15, 1907. No. 85560 C.

Suction Gas Producer Plant at Rocky Ford, Colo. Illustrated description of an installation for operating a water and light plant. 700 w. Power—Aug., 1907. No. 86030 C.

Suction Gas Engines and Gas Plants. Hugh Campbell. Deals with their modern aspect and the condition of both as they exist today. 8000 w. Plates. Trans Inst of Engrs & Shipbldrs in Scotland—Nov. 20, 1906. No. 81298 N.

Suction Gas Engines and Gas Plants. Hugh Campbell's paper on this subject is discussed. Ills. 9000 w. Trans Inst of Engrs & Shipbldrs in Scotland—Dec. 18, 1906. No. 82629 N.

Suction Gas Engines and Gas Plants. Continued discussion of paper by Hugh Campbell. 9900 w. Trans Inst of Engrs & Shipbldrs in Scotland—Jan. 22, 1907. No. 82630 N.

Suction Gas Engines and Gas Plants. H. Campbell. Abstract of a paper read before the Leeds Local Sec. of the Inst. of Elec. Engrs. Gives the costs of running gas engines in generating stations, and compares the results with those obtainable by steam plant. Discussion. 4000 w. Elect'n, Lond—Feb. 8, 1907. No. 82459 A.

Note on Suction Producer Plant. A. E. Porte. Read before the Dublin Sec. of the Inst. of Elec. Engrs. Considers the heat losses, the fuel, the efficiency, and the fundamental principles on which the suction producer operates, and some of its infirmities. 7800 w. Elec Engr, Lond—Jan. 25, and Feb. 1, 1907. Serial. 2 parts. No. 82244 each A.

The Working of a Suction Gas Plant. Arthur J. Stevens. An illustrated account of the actual working of a small suction gas plant, stating the circumstances and conditions which led to the adoption of this form of power. 2200 w. Min Jour—Jan. 26, 1907. No. 82150 A.

Limitations of Suction Gas Plant. A brief discussion of the minimum and maximum limitations. 1800 w. Elec Rev, Lond—Feb. 1, 1907. No. 82245 A.

The Use of Suction Gas Producers for Power Purposes. N. T. Harrington. An illustrated description of a suction gas producer, discussing the different classes of work to which it is applicable, performances, etc. 5000 w. Jour Assn of Engng Socs—Jan., 1907. No. 82497 C.

The Trials of Suction Gas Plants at Derby, 1906. Gives tables and results of the trials of suction-gas producers held

### COMBUSTION MOTORS

by the Royal Agricultural Society. 6000 w. Engr, Lond—Dec. 14, 1906. Serial. 1st part. No. 81255 A.

Trials of Suction-Gas Plants at Derby, 1906. Abstract of a report of these trials, carried out under the auspices of the Agricultural Society of England. 4000 w. Mech Engr—Jan. 12, 1907. Serial. 1st part. No. 81730 A.

100-Brake-Horse-Power "Ruston" Suction Gas Producer and Engine. Illustrates and describes this plant, built in England. 800 w. Engng—Dec. 21, 1906. No. 81343 A.

The Munzel Gas Engine and Producer. Illustrated description of this engine and suction gas producer. 1500 w. Ir Age—Dec. 20, 1906. No. 81070.

Suction Producer Gas, Its Formation and Economy as a Means for Generating Power in the Modern Producer Gas Engine. J. H. Clapperton. Briefly considers the comparative efficiency of the steam and gas engine, giving a detailed account of what takes place in a gas producer. Ills. 3000 w. Cent Sta—June, 1907. No. 84712.

Producer Gas for Power. James A. Charter. Illustrated description of a suction gas producer and its operation, with general remarks. 2000 w. Ir Age—June 27, 1907. No. 85295.

### Theory.

Explosion and Combustion Motors (Les Moteurs à Explosion et à Combustion. Les Gazogènes). A. Bochet. Theoretical discussion, diagrams. 3900 w. Bulletin de la Société Internationale des Electriciens—No. 60, Dec., 1906. No. 82318 F.

### Two-Cycle Engines.

The Two-Cycle Combustion Engine. James McIntosh. Reviews different features capable of improvement, and discusses how to make a success of the two-cycle engine. 2500 w. Ir Trd Rev—April 25, 1907. No. 83960.

### Water-Gas.

Water Gas (Das Wassergas). Herr Kayser. Discusses the use of water gas for lighting, heating and power purposes, describes its generation and gives tables of costs of actual plants, notably the municipal plant at Berlin. Ills. 6000 w. Gesundheits Ing—April 6, 1907. No. 84182 D.

The Value of Water Gas (Zur Bewertung des Wassergases). Franz Schäfer. A criticism of Herr Kayser's article in



## MECHANICAL ENGINEERING

### Water-Gas

*Gesundheits-Ingenieur* for April 6, 1907, taking exception to many of the latter's statements as to the value of water gas for heating, lighting and power purposes. 2500 w. *Gesundheits-Ing*—June 22, 1907. No. 85654 D.

Water Gas (Ueber Wassergas). H.

### HEATING AND COOLING

### Central Plants

Dicke. Describes the Dellwik-Fleischer system of water-gas generation, the first part of the serial describing the generator and giving details of operation, efficiency, losses, and costs. Curves. Ills. 3000 w. Serial. 1st part. *Stahl u Eisen*—Aug. 14, 1907. No. 86932 D.

## HEATING AND COOLING

### Auditorium.

The Warming and Ventilation of Churches, Halls and Theatres. Charles L. Hubbard. Brief discussion of successful methods. 2500 w. *Eng Rec*—Dec. 29, 1906. No. 81308.

Cooling an Auditorium by the Use of Ice. John J. Harris. Describes means used to cool the auditorium of the Scranton High School during commencement exercises. 500 w. *Heat & Vent Mag*—Sept., 1907. No. 87189.

Heating and Ventilating the United States Naval Academy. Showing method of ventilating lecture halls having stepped floors. Ills. 1200 w. *Heat & Vent Mag*—Oct., 1907. No. 87746.

### Boilers.

Specific Rating of the Heating Surface of Heating Boilers (*Die Spezifische Leistung der Heizkessel-Heizflächen*). G. de Grahl. Discussion of rate of evaporation, steam and water temperatures, etc., observed in house-heating boilers. Ills. 5900 w. *Gesundheits Ingenieur*—Nov. 3, 1906. No. 81850 D.

### Buildings.

Heating of Large Buildings by Steam and by Hot Water (*Die Wärmeversorgung grosser Gebäudekomplexe mit Dampf und Warmwasser*). M. Haller. Comparison of economy and effectiveness of the two systems. Diagram. 3600 w. *Gesundheits Ingenieur*—Jan. 19, 1907. No. 82351 D.

Modern Methods of Heating and Ventilation. A. G. King. The first of a series of articles dealing with this subject in a practical manner. 1800 w. *Archts & Bldrs Mag*—April, 1907. Serial. 1st part. No. 83774 C.

An Example of Heating Practice in Norway. Alf. Tjersland. Illustrated description of the usual type of heating system used, and an explanation of the method followed for determining the loss of heat from buildings and the amount of radiation needed. 1500 w. *Met Work*—May 18, 1907. No. 84357.

See also Auditorium, Car Sheds, Central Plants, Dwellings, Exhaust Steam, Furnaces, Garages, Greenhouse, Heat Losses, Hospitals, Hotels, Schoolhouses, Shops and Store-House Heating, under HEATING AND COOLING.

### Car Heating.

A Method of Ventilating and Heating Railroad Cars. Drawings and description of E. R. Swan's idea of a proper method of warming and ventilating railroad cars. 1400 w. *Met Work*—July 6, 1907. No. 85406.

### Car Sheds.

Heating Large Car Inspection Sheds. The heating of the sheds of the Brooklyn Rapid Transit Co. is described, also the down-draft forge installation. 2200 w. *Eng Rec*—May 18, 1907. No. 84429.

### Central Plants.

Central Heating System for Fifty-one Detached Buildings. Illustrated description of the central power plant, hot-water heating system and hot-water supply system for the New York Juvenile Asylum, Dobbs Ferry, New York. 2200 w. *Heat & Vent Mag*—April, 1907. No. 83855.

Hot-Water Heating of a Large Group of Buildings (*Mitteilungen über die Beheizung einiger Grösserer Gebäudegruppen mit Warmwasser*). A. C. Karsten. Illustrates and describes the heating systems of several groups of public buildings in Copenhagen. 2500 w. *Gesundheits-Ing*—May 25, 1907. No. 84971 D.

Heating and Ventilating a Group of Public Schools. Samuel R. Lewis. Read before the Am. Soc. of Heat. & Vent. Engrs. Plans and description of a plant in Galesburg, Ill., which furnishes steam heat, electric current for lighting and power, and compressed air for various purposes, to three school buildings located on the same block. 1800 w. *Heat & Vent Mag*—July, 1907. No. 85828.

Warming and Ventilating the New Convocation Hall, University of Toronto. Charles L. Hubbard. A group of four

## MECHANICAL ENGINEERING

### Combination Plants

buildings in course of construction to be warmed and lighted by a central plant. The system is illustrated and described. 2000 w. Eng Rec—June 15, 1907. No. 85062.

Results of Operation of the Municipal Central Heating and Electric Plant at Dresden (Ueber die Betriebsergebnisse des Kgl. Fernheiz- und Elektrizitätswerkes zu Dresden). R. Trautmann. Paper read before the Convention of Heating and Ventilating Engineers at Vienna, 1907. Gives costs and details of operating a central plant for heating and lighting a group of municipal buildings. Ills. 4000 w. Gesundheits-Ing—June 2, 1907. No. 85652 D.

### Combination Plants.

Heating and Ventilating. F. M. Griswold. Describes the fire hazard of combination systems, giving suggestions, and noting dangerous practices. 1800 w. Ins Engng—June, 1907. No. 85194 C.

### Cooling Towers.

Cooling Towers. B. Franklin Hart, Jr. Read before the Am. Soc. of Refrig. Engrs. Describes the use of the cooling tower in a refrigerating or ice-making plant and its advantages. Ills. 1900 w. Stevens Ind—Jan., 1907. No. 83309 D.

Cooling Tower Practice. Jos. H. Hart. Explains the usefulness of cooling towers, their object, reliability, durability, cost, etc. 1700 w. Elec Rev, N Y—Feb. 16, 1907. No. 82406.

The Capacity of Cooling Towers. Reviews a paper by C. O. Schmitt, read before the S. African Assn. of Engrs. on "Cooling Towers for the Circulation Water of Surface Condensing Plants." Deals with four types of towers, discussing their efficiency. Ills. 2000 w. Engr, Lond—Sept. 13, 1907. No. 87221 A.

### Dry-Air.

Properties of Dry Air (Vom Trocknen). Otto Marr. Physical and chemical properties of air having different degrees of temperature and water vapor. Diagrams and tables. Serial. First part. 3300 w. Gesundheits Ingenieur—Dec. 8, 1906. No. 83665 D.

### Dwellings.

The Heat Absorption and Transmission of the Outer Walls of Buildings (Wärmeaufnahme und -abgabe der Umfassungswände von Gebäuden). G. de Grahl. Paper read at the Convention of Heating and Ventilating Engineers at Vienna, 1907. Refers principally to dwelling houses and gives numerous diagrams, curves, and tables. 7500 w. Gesundheits-Ing—June 2, 1907. No. 85651 D.

### HEATING AND COOLING

### Exhaust Steam

Indirect System of Residence Heating. Plans and description of a low pressure gravity circulating system of steam heating, using the indirect system for the principal rooms, and the direct for rooms at a distance from the boiler. 1500 w. Met Work—Aug. 3, 1907. No. 86059.

The Heating of Houses in France. Charles F. Hauss. Describes the hot-water system as applied to an apartment house, and to a dwelling house. Plans. 2500 w. Met Work—Sept. 14, 1907. No. 86893.

### Electric Heating.

Electric Heating. W. J. Barr. Remarks on recent progress in the use of electrical heating appliances. 800 w. Elec Wld—Jan. 5, 1907. No. 81505.

The Prometheus System of Electric Heating. This system consists primarily of resistances composed of metallic films deposited on insulating bases, the metallic film being protected by enclosure in a metallic case, from which it is insulated. Ills. 1500 w. Mech Engr—Oct. 27, 1906. No. 80299 A.

The Electrical Heating Plant of the Biltmore Estate. Charles E. Waddell. States the conditions which led to the installation of an electrical plant, giving an illustrated description, and an account of its performance in daily service. 1200 w. Elec Wld—Oct. 5, 1907. No. 87487.

Cooking by Electricity. Putnam A. Bates. Presents the advantages of electricity for cooking, discussing the cost, and related subjects, giving an illustrated description of the electric grill in service at the Waldorf-Astoria. 2500 w. Elec Wld—Jan. 5, 1907. No. 81504.

Electric Cooking and Heating in Hotels. An illustrated account of two heating and cooking installations of considerable size in Switzerland, giving details of apparatus used. 2000 w. Elect'n, Lond—July 19, 1907. No. 85986 A.

See also Wiring, under ELECTRICAL ENGINEERING, DISTRIBUTION.

### Exhaust Steam.

Features of Exhaust Steam Heating. Charles L. Hubbard. Considers some of the advantages and objections relating to the use of exhaust steam, with suggestions. 1500 w. Heat & Vent Mag—Dec., 1906. No. 81098.

Heating and Ventilating the Title Guarantee Trust Building, New York. Plans and description of the systems installed. Ventilation is accomplished by both fresh air supply and exhaust. The heating is by direct radiation, utilizing exhaust

## MECHANICAL ENGINEERING

### Fan Blowers

steam. 4000 w. Eng Rec—June 1, 1907. No. 84702.

#### Fan Blowers.

The Realm of the Fan Blower. Walter B. Snow. Illustrates and describes some of the many applications made of fan blowers. 2000 w. Cassier's Mag—Nov., 1906. No. 80212 B.

The Fan and the Furnace. J. R. Cravath. On the use of electric fans for forced circulation in a hot-air furnace, illustrating the arrangement. 600 w. Elec Wld—Jan. 5, 1907. No. 81506.

Galvanized Iron Work for Fan Systems. G. W. Frost. Treats of methods employed in the construction of ducts and flues used with the fan systems of heating and ventilation, with other details. Ills. 600 w. Met Work—Jan. 19, 1907. Serial. 1st part. No. 81675.

High-Pressure Centrifugal Fans. A. Rateau. Reports experiments made to determine how far centrifugal fans could be driven under the best conditions as regards mechanical efficiency. 4500 w. Engng—Aug. 16, 1907. Serial. 1st part. No. 86601 A.

Centrifugal Electric Driven Fans. John Howatt. Considers fans for producing artificial ventilation. 2300 w. Engrs' Soc of Univ of Minn—Year Book, 1907. No. 84631 N.

Comparison of Recent Ventilators with A. C. Motor Drives and Variable Speed (Vergleichende Untersuchungen an neuern Capellventilatoren mit Drehstromantrieb und veränderlicher Umlaufgeschwindigkeit). R. Goetze. Illus. 2900 w. Glückauf—March 30, 1907. No. 83667 D.

More Data Concerning Fan Heaters. E. T. Child. Reports investigations made of the steam requirements and temperatures obtained in pipe coil heaters. 2000 w. Met Work—Oct. 5, 1907. No. 87434.

See also Schoolhouses, under HEATING AND COOLING.

#### Furnaces.

Megass Furnaces. Richard Lloyd. Describes some trials of ordinary megass furnaces, as used in British Guiana, with special reference to the quantity of air admitted for combustion. Ills. 2200 w. Inst of Civ Engrs, No. 3643—No. 84462 N.

Heaters for Hot Blast and Ventilation. Charles L. Hubbard. Illustrated descriptions of types of heaters, discussing their efficiency, etc. 2500 w. Mach, N Y—March, 1907. No. 82765 C.

Types of Enclosed Steam Water Heaters. C. R. Allensby. Read before the

### HEATING AND COOLING

### Heat Losses

Cic. & Mech. Engrs. Soc. Illustrates and describes the construction of some of the familiar types of heaters. 2500 w. Mech Engr—March 23, 1907. Serial. 1st part. No. 83415 A.

Furnace Heating in an Allegheny Church. An interesting example of hot-air heating by the use of two furnaces in one battery, one furnace being equipped for burning coal, and the other for both coal or natural gas. 2000 w. Met Work—June 15, 1907. No. 85038.

Highest Economy in Furnace Heating. Considers the proper temperatures, ventilation and coal consumption for different outside temperatures. 2000 w. Met Work—Nov. 10, 1906. No. 80264.

Proper Heater Location and Duct Area Exemplified. John P. Bird. Illustrated description of a furnace heating system with branching cellar mains and oval flues. Also editorial. 1400 w. Met Work—March 16, 1907. No. 83051.

See also Fan Blowers, under HEATING AND COOLING.

#### Garages.

Heating Motor Houses. Considers the methods and difficulties, suggesting apparatus. 2000 w. Autocar—Oct. 27, 1906. No. 80293 A.

#### Gas Heating.

The Testing and Hygienic Efficiency of Gas Fires. Jno. H. Brearley. Read before the Inst. of Gas Engrs. An account of the tests made by the writer for radiation, for heat convection, and for carbon monoxide. 4500 w. Engr, Lond—July 2, 1907. No. 85876 A.

#### Greenhouse.

Greenhouse and Conservatory Heating. A. S. Atkinson. Considers a hot-water plant, properly installed and equipped, to serve the purpose better than any other system, and discusses some of the essentials. 2000 w. Sci Am Sup—Dec. 15, 1906. No. 80980.

#### Heat Losses.

Cooling for Buildings (Abkühlung von Gebäuden). O. Krell. Mathematical discussion of heat interchange between interior and exterior of different kinds of buildings. Diagrams. 6100 w. Gesundheits Ingenieur—Jan. 5, 1907. No. 82350 D.

Methods of Estimating Heat Losses from Buildings. Charles L. Hubbard. Presents, in tabular form, the information contained in Reginald Pelham Bolton's heat loss chart, with figures of several additional forms of construction. 1200 w. Heat & Vent Mag—Sept., 1907. No. 87188.

# MECHANICAL ENGINEERING

## History

Calculation of Heat Transmission in Europe and the U. S. (Die Wärmetransmissionsberechnung in Amerika und bei uns). Bronislaw Biegeleisen. A comparison of the formulæ employed by heating engineers for various buildings. Diagrams and tables. Serial. 2 parts. 6000 w. *Gesundheits-Ingenieur*—Nov. 17 and 24, 1906. No. 81854 each D.

See also Dwellings, under HEATING AND COOLING.

## History.

Ancient Heating Methods. Charles F. Hauss. Illustrates and describes the charcoal pans or braziers used, discussing the effect of the products of combustion and their efficiency. 2500 w. *Met Work*—Nov. 24, 1906. No. 80568.

The History of Heating Engineering up to the Year 1870 (Aus der Geschichte der Zentralheizungs-technik bis zum Jahre 1870). Hermann Vetter. Paper read at the Convention of Heating and Ventilating Engineers at Vienna, 1907. An exhaustive historical review of heating methods prior to 1870. Ills. 15000 w. *Gesundheits-Ing*—June 2, 1907. No. 85650 D.

Heating from Roman Times to 1870. Hermann Vetter. Translation of a paper appearing in *Gesundheits-Ingenieur*. 2800 w. *Met Work*—Sept. 28, 1907. Serial. 1st part. No. 87274.

## Hospitals.

The Heating and Ventilating of Hospitals (Heizung und Lüftung in Krankenhäusern). H. Rietschel. Paper read before the Convention of Heating and Ventilating Engineers at Vienna, 1907. Discusses the peculiar problems in hospital heating and ventilating. 5000 w. *Gesundheits-Ing*—June 8, 1907. No. 85653 D.

Heating and Ventilating a Hospital in New York. A notable example, in which air is distributed from a large plenum chamber and heated in a solarium by hot water from steam, is illustrated and described. The Willard Parker hospital. 3500 w. *Met Work*—July 6, 1907. No. 85405.

Fan Furnace System of Heating a Hospital. Drawings and description of an example of the use of a fan with a warm air furnace. 1200 w. *Met Work*—Sept. 7, 1907. No. 86826.

## Hot-Air.

Improved Hot-Air Heating (Verbesserte Luftheizung). Herr Boehmer. Discusses hot-air heating as applied to small buildings, describing heaters and systems. Ills. 4500 w. *Gesundheits-Ing*—Sept. 21, 1907. No. 87640 D.

## HEATING AND COOLING

## Hot-Water

Hot Blast Heating. Charles L. Hubbard. Considers the subject as covering all forms of heating and ventilation where a fan is used for moving the air. 1100 w. *Dom Engng*—Feb. 16, 1907. Serial. 1st part. No. 82420.

Charts Showing the Performance of Hot-Blast Coils. Burt S. Harrison. With explanatory notes. 700 w. *Heat & Vent Mag*—Oct., 1907. No. 87748.

The Plenum System of Warm Air Heating for a School or Office Building. J. D. Hoffman. Read before the Am. Soc. of Heat. & Vent. Engrs. Aims to show how such a line of work could be accomplished. 2500 w. *Dom Engng*—Aug. 17, 1907. No. 86433.

See also Fan Blowers, Furnaces, Hospitals, Indirect Heating, Steam Heating and Shops, under HEATING AND COOLING.

## Hot-Water.

Graphical Tables for Hot-Water Heating, Ventilating, and Chimney Design (Graphische Tafeln zur Berechnung von Warmwasserheizungen, Lüftungen und Schornsteinen). Herr Gramberg. Gives a number of curves showing graphically loss of pressure in pipes, etc., and with examples of their use. Ills. 6000 w. *Gesundheits-Ing*—July 6, 1907. No. 86265 D.

Hot Water Heating. Charles L. Hubbard. Explains the action of this system, direct heating, the capacity of a radiator, piping, etc., in the present article. Ills. 2000 w. *Met Work*—Jan. 5, 1907. Serial. 1st part. No. 81393.

The Arrangement and Design of Piping in Hot-Water Heating with Special Reference to the Loss of Heat in Pipes (Anordnung und Bemessung der Rohrleitung bei Warmwasserheizungen mit Besonderer Berücksichtigung der Wärmeverluste im Rohrnetz). Ernst Lucas. A mathematical discussion with elaborate tables. Ills. 6500 w. *Gesundheits-Ing*—July 13, 1907. No. 86266 D.

Heat Absorption Through Tubes. William R. Billings. Considers the effect of using water in small streams at high velocity. Ills. 2000 w. *Engr, U S A*—May 15, 1907. No. 84407 C.

A Rapid Current Hot Water Heating System. Illustrates and describes a system used recently in Germany and England, known as the Brückner system. The rapid circulation of the water is produced by a short length of pipe in which steam separation and emulsion take place. 1000 w. *Eng News*—Nov. 22, 1906. No. 80555.

Quick Circulating Systems of Hot Water Heating. C. Guitton. Read before

# MECHANICAL ENGINEERING

## Hot-Water

## HEATING AND COOLING

## Plants

the Am. Soc. of Heat. and Vent. Engrs. Briefly reviews the principal features of the systems of Reck, Brückner, Hamelle, Koerting, etc., and describes in detail the Rouquaud system, or circulation by fall. 2800 w. Met Work—Feb. 23, 1907. No. 82517.

Rapid-Circulation Hot-Water Heating Systems (Warmwasser-Schnellumlaufheizungen). Ed. Meter. Read at the Heating and Ventilating Congress in Vienna, 1907. Illustrates and describes various systems. 6000 w. Gesundheits-Ing—July 20, 1907. No. 86267 D.

The Reck System of Heating by Hot-Water Circulation (Die Warmwasserheizung "System Reck" mit Wassermischung). An illustrated description of the system and of recent installations. 4500 w. Gesundheits Ing—Aug. 24, 1907. No. 86977 D.

The Heating of Water with Gas Fuel (Warmwasserversorgung mit Gasfeuerung). Paul Fusbahn. Illustrates and describes, in the first part of the serial, small bath-room installations for heating water as needed. Serial. 1st part. 4000 w. Gesundheits-Ing—May 11, 1907. No. 84968 D.

Preliminary Report of the Committee to Secure Data on Hot Water Heating. Gives Data covering present practice in various parts of the country. The subject is considered under the heads of boilers, radiation, and piping. 3000 w. Heat & Vent Mag—May, 1907. No. 84456.

Reasonable Hot-Water Heating Plants (Billige Warmwasserheizanlagen). E. Stadelmann. A short article on this subject with a prolonged discussion between the author and Fritz Gerlach. Diagram. 4500 w. Gesundheits Ing—April 13, 1907. No. 84183 D.

See also Boilers, Buildings, Central Plants, Dwellings, Greenhouse, Hospitals, and Shops, under HEATING AND COOLING.

## Hotel.

Heating and Ventilating the Hotel Knickerbocker, New York City. Illustrates and describes the mechanical equipment for this fine hotel, at Broadway and 42d St. 3800 w. Eng Rec—July 13, 1907. No. 85541.

## Hygiene.

The Hygienic and Economic Importance of Heating and Ventilating Engineering (Die Gesundheitliche und Wirtschaftliche Bedeutung der Heizungs- und Lüftungstechnik). Karl Suwald. Read at the Congress of Heating and Ventilating Engineers at Vienna, 1907. 3500 w. Gesundheits-Ing—July 27, 1907. No. 86268 D.

## Indirect Heating.

Indirect Gravity Heating. E. T. Child. Gives simple and reliable methods for determining the amount of radiating surface and the flue and register sizes for varying heights. Also editorial. 1600 w. Met Work—Nov. 3, 1906. No. 80206.

Temperatures for Testing Indirect Heating Systems. W. W. Macon. Read before the Am. Soc. of Heat. & Vent. Engrs. Gives values of temperatures for use in testing such systems during periods when the zero weather conditions, for which the system is designed, are not existing. 2800 w. Met Work—Jan. 26, 1907. Serial. 1st part. No. 81922.

## Pipes.

Standard Sizes of Steam Pipes. James A. Donnelly. A discussion of the proper sizes of steam mains and methods of determining the velocity, quantity, etc. Tables and formulas. 2000 w. Heat & Vent Mag—Jan., 1907. No. 81793.

Standardization of Cast-Iron Heating and Ventilating Pipes. Louis F. Pearson. From a paper before the British Inst. of Heat. & Vent. Engrs. An account of the work done by the committee appointed to consider cast pipes. 2200 w. Heat & Vent Mag—March, 1907. No. 83173.

## Plants.

The Heating, Ventilating and Electrical Equipment of the Clafin Building, New York. Illustrated description of the very complete plant for this ten-story and basement steel and brick structure. 5000 w. Eng Rec—Feb. 23, 1907. No. 82524.

Heating and Ventilating Plant of the United Engineering Building, New York. An illustrated detailed description of both supply and exhaust ventilation, and direct and indirect heating. Ills. 4000 w. Eng Rec—Feb. 16, 1907. No. 82417.

Heating and Ventilating the Commercial National Bank Building, Chicago. Plan and detailed description of plant for an 18-story office building. 3500 w. Eng Rec—Oct. 26, 1907. Serial. 1st part. No. 87939.

The Mechanical Ventilation and Warming of St. George's Hall, Liverpool. Charles R. Honiball. Describes an installation for warming and ventilating that has been in successful working since 1851. Ills. 4500 w. Heat & Vent Mag—Oct., 1907. No. 87747.

The Heating and Ventilating Plant of the Post-Office Savings Bank Bureau at Vienna (Die Heizungs- und Lüftungsanlage im k. k. Postsparkassenamtsgebäude in Wien). A. Puppel. Ills. 2700 w.

# MECHANICAL ENGINEERING

## Plants

Gesundheits-Ing—Sept. 21, 1907. No. 87-639 D.

Heating and Ventilating Plant of a Detached College Building. R. E. Chandler. Illustrates and describes the plant installed at the Oklahoma Agricultural and Mechanical College, at Stillwater, Okla. 600 w. Heat & Vent Mag—Dec., 1906. No. 81097.

Mechanical Equipment of the New City Hall at Newark; N. J. Plan and description of the mechanical plant for a 4-story and basement building, having an unusual heating and ventilating system. 3500 w. Eng'g Rec—Aug. 17, 1907. Serial. 1st part. No. 86422.

Heating and Ventilating the People's Palace, Boston. Detailed description of the mechanical plant for a five-story building for the Salvation Army. Heating is by direct radiation on the two-pipe system. Ventilation supplies a filtered air supply and exhausts foul air. Ills. 3500 w. Eng Rec—May 4, 1907. No. 84223.

See also Buildings, Central Plants, and Electric Heating, under HEATING AND COOLING; and Power Plants, under POWER AND TRANSMISSION.

## Refrigeration.

Mechanical Refrigeration. J. C. Goosmann. Discusses some of the physical laws that make possible the artificial production of low temperatures. 1500 w. Engr, U S A—Feb. 1, 1907. No. 82101 C.

Mechanical Refrigeration. Alex. M. Blumenthal. An explanation of systems of refrigeration, the processes and apparatus used. 3500 w. Engr, U S A—May 15, 1907. No. 84406 C.

Mechanical Production of Low Temperatures. Sydney F. Walker. Discusses principles of refrigerating processes which may be used for cooling deep workings and in sinking by freezing. 4000 w. Eng & Min Jour—June 22, 1907. No. 85219.

Typical Representation of Work and Change of State of the Refrigerant in All Parts of a Compression Machine (Bildliche Darstellung der Arbeitsvorgänge und Zustandsänderung des Kältemittels in allen Teilen der Kompressions-Kältemaschine). Gustav Döderlein. Action of such machines shown and discussed by indicator diagrams. Diagrams. 1700 w. Zeitschrift des Vereines Deutscher Ingenieure—Feb. 16, 1907. No. 82933 D.

Clearance in a Refrigerating Machine. Oswald Gueth. Calls attention to losses of work in a compressor because of clearance and the effect of the design in curtailing these losses. Ills. 1700 w. Engr, U S A—April 1, 1907. No. 83385 C.

## HEATING AND COOLING

## Refrigeration

Preliminary Report of the Committee on a Code of Rules for Conducting Tests of Refrigerating Machines. 4500 w. Pro Am Soc of Mech Engrs—April, 1907. No. 83760.

The Value of the Indicator in Refrigeration Work. Dr. Joseph H. Hart. Its usefulness shown by analogy to steam-engine practice. Discusses the standard diagram and its meaning in compression. 3000 w. Engineering Magazine—Aug., 1907. No. 85919 B.

The Application of Mechanical Refrigeration to Ice Cream Manufacture. Jos. H. Hart. Briefly describes the change in methods made necessary by the great quantities of ice cream required for large cities, describing a refrigerating plant for ice cream making, and the manufacture of this product. 2500 w. Jour Fr Inst—Nov., 1906. No. 80409 D.

Electric Refrigeration in a Wholesale Produce House. Illustrates and describes an example of the use of automatic electric refrigeration in Lowell, Mass. 800 w. Elec Wld—July 6, 1907. No. 85486.

Cold Storage on Board Ship. Sydney F. Walker. Discusses causes of failure, and points of importance in the case of a ship refrigerating system. 4500 w. Int Marine Engng—Jan., 1906. Serial. 1st part. No. 81220 C.

Refrigeration on Shipboard. Joseph H. Hart. Reviews briefly the types and methods of refrigerating machines, their efficiency, operation, etc. 3000 w. Cassier's Mag—March, 1907. No. 83031 B.

Planning an Absorption Ice Plant. William S. Luckenbach. Gives details of arrangement of machinery and piping in a plant operated on this system. 2000 w. Engr, U S A—Nov. 15, 1906. No. 80435 C.

Operating an Absorption Machine. William S. Luckenbach. Gives practical details in the operation of an absorption ice plant. 3000 w. Engr, U S A—March 1, 1907. No. 82745 C.

A Modern Absorption Ice Plant. William S. Luckenbach. Illustrates and describes in detail the planning and installation of a 60-ton plant. 3000 w. Engr, U S A—Feb. 15, 1907. No. 82435 C.

Absorption Refrigerating Machines. James W. Cooper. Diagrammatic elevation and explanation of how a plant is laid out, giving practical directions for running either a dry or a brine system. 2500 w. Power—April, 1907. No. 83247 C.

Compression and Absorption Systems. Oswald Gueth. Gives considerations affecting the economy of the two systems and results from actual tests. 3300 w. Engr, U S A—June 15, 1907. No. 85089 C.

## MECHANICAL ENGINEERING

### Refrigeration

Closing Down a Plant. J. C. Calhoun. Valuable suggestions in regard to what to do when closing down an ice making or refrigerating plant prior to overhauling or repairing. 2200 w. *Ice & Refrig*—Nov., 1906. Serial. 1st part. No. 80223 C.

Overhauling the Ice Plant. E. T. Skinkle. Suggestions on overhauling an ice plant when shut down at close of season. 3300 w. *Ice & Refrig*—Nov., 1906. No. 80224 C.

Ammonia Fittings. J. C. Calhoun. Discusses various designs and the weak points in each, showing the importance of the proper hanging of pipe lines, and discussing related topics. 3300 w. *Ice & Refrig*—Feb., 1907. No. 82121 C.

Combination Ice and Light Plants. Rufus E. Lee. Considers the cost of manufacturing ice in independent and combination plants. 3000 w. *Ice & Refrig*—June, 1907. No. 84728 C.

Brine Circulation vs. Direct Expansion. Oswald Gueth. Presents the comparative advantages and disadvantages of brine and direct expansion systems of utilizing the cooling effect of an expanding gas. 3000 w. *Engr, U S A*—Dec. 1, 1906. No. 80799 C.

Refrigeration as an Auxiliary to the Power Plant. Joseph H. Hart. Discusses the utilization of exhaust steam for the evaporation of ammonia in connection with the absorption process for refrigeration. 1500 w. *Cassier's Mag*—Aug., 1907. No. 86006 B.

Description of a Cold Storage Plant Utilizing Exhaust Steam. Henry Torrance, Jr. Read before the Am. Soc. of Refrig. Engrs. An illustrated article showing what can be done in cold storage warehouses, with the absorption system of mechanical refrigeration, using exhaust steam from the auxiliary machinery. 800 w. *Eng Rec*—Dec. 29, 1906. No. 81309.

Refrigerating Plant of Washington Brewing Company. Illustrates and describes a modern plant in Columbus, Ohio, designed for economical operation. 2500 w. *Engr, U S A*—Sept. 16, 1907. No. 87046 C.

The Cooling Plant for Walter Baker & Co., Ltd., Dorchester, Mass. Describes a plant embodying advanced ideas in refrigerating engineering. Ills. 2000 w. *Eng Rec*—Sept. 21, 1907. No. 87155.

The Commercial Application of Refrigeration. Hal Williams. Showing the large field developed for the application of refrigeration in the industries. General discussion. 8500 w. *Jour Soc of Arts*—Feb. 22, 1907. No. 82820 A.

### HEATING AND COOLING

### Steam Heating

The Present Condition of the Refrigeration Industry (Etat Actuel de l'Industrie Frigorifique). Ch. Lambert. An exhaustive review of the industrial applications of refrigeration, the methods and machines used, and the theories involved in its development. Ills. Tables. 32000 w. *Mem Soc Ing Civ d France*—April, 1907. No. 85600 G.

#### Schoolhouses.

Blower System of Schoolhouse Heating. Plans, with description. 1500 w. *Dom Engng*—Oct. 12, 1907. No. 87577.

#### Shops.

Heating System of the Kingsland Shops of the Delaware, Lackawanna & Western R. R. Illustrated description of the arrangements for a central station system of hot-water circulation, with combinations of direct and indirect radiation. 3000 w. *Eng Rec*—Jan. 12, 1907. No. 81578.

The Heating and Ventilation of Machine Shops. Charles L. Hubbard. Discusses methods of air distribution, showing the application of hot-blast heating to machine shops and other buildings of similar construction. 2500 w. *Mach, N Y*—Sept., 1907. No. 86747 C.

#### Steam Heating.

Points on the Design of a High-Pressure Superheated Steam Heating System, Combined with a Light and Power Plant. Frank Koester. Outlines some of the more important points, as employed in European practice, to be taken into consideration in designing such a plant. Ills. 2200 w. *Heat & Vent Mag*—Jan., 1907. No. 81794.

The Carrying Capacity of Pipes in Low-Pressure Steam Heating. William Kent. Read before the Am. Soc. of Heat and Vent. Engrs. Gives tables based upon an assumed drop of one pound pressure per 1,000 ft. of length, explaining their use. Discussion. 4000 w. *Heat & Vent Mag*—Feb., 1907. No. 82614.

Arrangement of Steam Heating Apparatus for Pressure from a Low-Pressure Steam Boiler (Die Anordnung von Dampfheizapparaten innerhalb der Druckhöhe von Niederdruckdampfkesseln). M. Grellert. Diagram and formulae. 3100 w. *Gesundheits Ingenieur*—Feb. 2, 1907. No. 83607 D.

Air Valves for Steam Heating Systems. W. H. Wakeman. The first of a series of illustrated articles giving details of why and where air valves are used. 1800 w. *Dom Engng*—Oct. 26, 1907. Serial. 1st part. No. 87918.

Comparative Cost of Steam Heating for

## MECHANICAL ENGINEERING

### Steam Heating

Various Steam Pressure and Room Temperatures. John J. Harman. Gives information collected by the writer as to the amount of steam required in direct radiators for various steam pressures and room temperatures. 2000 w. *Met Work*—June 15, 1907. No. 85039.

The Combined Pressure and Vacuum System of Steam Heating. George D. Hoffman. Read before the Am. Soc. of Heat. & Vent. Engrs. Presents the advantages claimed for this new system of vacuum steam heating. 2500 w. *Heat & Vent Mag*—July, 1907. No. 85829.

A New Method in Vacuum Heating. A brief description of an improvement and a statement—the advantages of compounding heating coils to save steam. 1500 w. *Engr, U S A*—July 1, 1907. No. 85373 C.

The Vacuum Heating System in the Godfrey Block, Grand Rapids. Brief description, with plans, of a departure from the usual arrangement of connections and radiation for vacuum heating. 1600 w. *Eng Rec*—Sept. 14, 1907. No. 87032.

Heating and Ventilation of the Engineering Building at the University of Pennsylvania. Illustrates and describes the system of heating by direct radiation, with mechanical ventilation systems for the more important rooms. 2700 w. *Eng Rec*—Dec. 8, 1906. No. 80910.

Heating and Ventilating the Budapest Stock Exchange. Charles Knuth. From a paper read before the Inst. of Heat. & Vent. Engrs. at Windsor, Eng. Gives a detailed explanation of steam pipe size determinations, and other features of the system installed. 2800 w. *Met Work*—July 13, 1907. No. 85500.

Heating System of the St. Francis Home, Detroit, Mich. Describes a scheme of heating combining hot blast for public rooms, and direct radiation for smaller rooms and for auxiliary heating. 4500 w. *Eng Rec*—Oct. 19, 1907. No. 87785.

See also Boilers, Buildings, Central Plants, Dwellings, Exhaust Steam, Pipes and Valves, under **HEATING AND COOLING**; and Exhaust Steam, under **STEAM ENGINEERING**.

### Store-House Heating.

Cost of Heating Store Houses. H. O. Lacount. Investigates the cost of heating store-houses equipped with automatic sprinklers to prevent the freezing of the pipes. Compares with cost of dry-pipe, and calcium chlorid sprinkler equipments. 7000 w. *Pro Am Soc of Mech Engrs*—June, 1907. No. 84646 F.

### Temperature Regulation.

Johnson System of Temperature Regu-

### HEATING AND COOLING

lation. Illustrates and describes the construction, principle of operation and application of thermostat to direct and in-  
U S A—Dec. 1, 1906. No. 80800 C.

Device for Automatically Controlling the Heating of a House. Illustrated description of the "syphon regitherm," a device invented by Weston M. Fulton, explaining its operation. 1000 w. *Sci Am Sup*—Oct. 5, 1907. No. 87476.

### Textile Mills.

A New Departure in Cooling and Humidifying Textile Mills. W. H. Carrier. Read before the Am. Assn. of Cotton Mfrs. Shows the Scientific principles applying to the artificial attainment of the conditions necessary in cotton mills, describing a system believed by the writer to embody such principles most effectually. 3300 w. *Heat & Vent Mag*—June, 1907. Serial. 1st part. No. 85266.

### Theatres.

The Heating and Ventilation of the Cleveland Hippodrome. Illustrates and describes an interesting type of downward ventilation with an auxiliary system of direct steam heating. 2000 w. *Heat & Vent Mag*—Jan., 1907. No. 81792.

Construction and Operation of the Heating and Ventilating Arrangements of the New Theatre in Nürnberg (Bau und Betrieb der Heiz- und Lüftungseinrichtungen des Neuen Theatres in Nürnberg). O. Krell. An illustrated, detailed description. Serial. 2 parts. 22500 w. *Gesundheits-Ing*—May 18 and 25, 1907. No. 84970 D.

### Tunnel Ventilation.

Experimental Cooling System in the New York Subway. Outlines the work that has been done for ventilating and cooling the subway air in warm weather, giving an illustrated description of the experimental plant installed at the Brooklyn Bridge Station. 1600 w. *Elec Ry Rev*—Dec., 1906. No. 81046.

Ventilating a German Tunnel. Illustrated description of the ventilating plant for the Kaiser Wilhelm tunnel at Cochem. 1000 w. *Engr, Lond*—May 10, 1907. No. 84451 A.

Ventilation of the Battery Tunnels of the New York Subway Extension to Brooklyn. Plan and description of a system of mechanical ventilation under difficult conditions. The arrangements of the blower stations and the apparatus and duct systems are shown. 3000 w. *Eng Rec*—Oct. 5, 1907. No. 87444.

### Valves.

Steam Passage in Low Pressure Steam

### Valves



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## Ventilation

Heating Valves (Über den Dampfdurchgang durch Regulierentile in Niederdruckdampfheizungen). Herr Zyka. Ills. 600 w. Gesundheits Ingenieure—Oct. 27, 1906. No. 81852 D.

## Ventilation.

A Heterodox View of Ventilation. Aims to show wherein the downdraft system is wrong and to explain a rational system of ventilation. Ills. 2000 w. Can Engr—Nov., 1906. No. 80272.

Air, and Its Relation to Vital Energy. S. H. Woodbridge. A comparison between the requirements of mechanical and vital systems, showing the great importance of an adequate supply of pure air. 3500 w. Dom Engng—April 6, 1907. Serial. 1st part. No. 83507.

The Ventilation of School Buildings. Thomas S. Ainge. The present article considers the essentials of good ventilation and the methods of securing them. 3300 w. Dom Engng—Jan. 12, 1907. Serial. 1st part. No. 81585.

A Notable Jersey Schoolhouse Ventilating Plant. The heating and ventilating system installed in the Ashland School, in East Orange, N. J., is illustrated and described. Indirect heating from Kinnear radiation and from steam boiler setting. Ventilated by gravity or by fans. 2500 w. Met Work—March 2, 1907. No. 82676.

Ventilation of Office Buildings (Über Lüftungseinrichtungen in Amtsgebäuden). Leopold Nowotny. Consideration of the

## HYDRAULICS

## Centrifugal Pumps

size of air openings required. Diagram. 1800 w. Oest Wochenschrift f d Oeffentlichen Baudienst—Jan. 26, 1907. No. 82934 D.

Ventilation of the New Theatre in Cologne (Die Lüftung des Neuen Stadttheaters in Köln). Herr Herbst. Description of general method used. 2500 w. Gesundheits Ingenieur—Jan. 5, 1907. No. 82311 D.

The Ventilation of the House of Commons. Walter Yates. Slightly abridged paper read before the Heat. & Vent. Engrs. of Gt. Britain. Plans and description of methods now employed, with brief account of earlier methods. 3500 w. Met Work—March 30, 1907. Serial. 1st part. No. 83318.

The Ventilation of Factories. Editorial review of the Departmental Committee report to the Home Secretary, on investigations made to remove injurious dust in the trades. 2500 w. Engng—Aug. 23, 1907. No. 86732 A.

Cooling Public Rooms in a Chicago Hotel. Illustrated detailed description of air cooling and ventilating plant for rooms in the Auditorium Annex at Chicago. 3000 w. Ice & Refrig—Oct., 1907. No. 87432 C.

See also Auditorium, Buildings, Central Plants, Exhaust Steam, Fan Blowers, Furnaces, Hotels, Hygiene, Pipes, Plants, Shops, Steam Heating, Theatres, and Tunnel Ventilation, under HEATING AND COOLING.

## HYDRAULICS

## Annular Openings.

The Flow of Water Through Annular Spaces (Strömungsvorgänge in Ringförmigen Spalten). Ernst Becker. A mathematical paper, describing a series of tests to determine the values of coefficients used in the theoretical formulæ. Ills. 5000 w. Zeitschr d Ver Deutscher Ing—July 20, 1907. No. 86275 D.

## Canals.

The Effect of Changes in Canal Cross Sections Upon the Rate of Flow. F. W. Hanna. Gives briefly methods of determining mathematically the loss of head in canal flow due to contractions and expansions of cross section of waterway, either modified or unmodified. 2000 w. Eng News—June 6, 1907. No. 84820.

## Centrifugal Pumps.

Construction of Centrifugal Pumps.

William G. Gass. Abstract of a paper read before the Manchester Assn. of Engrs. Divides centrifugal pumps into four general types, considering each in detail. Ills. 3000 w. Mech Engr—Jan. 5, 1907. Serial. 1st part. No. 81633 A.

The Spiral Shell of Turbines, Centrifugal Pumps, etc. (Die Spiralgehäuse von Turbinen, Kreiselpumpen, usw.). Rudolf Lorenz. Mathematical discussion of its design. Ills. 2400 w. Serial. 1st part. Zeitschr f d Gesamte Turbinenwesen—April 30, 1907. No. 84161 D.

Even Diffusers on Centrifugal Pumps (Glatter Diffuser bei Zentrifugalpumpen). J. Novak. A theoretical and mathematical discussion of their design. Ills. 2500 w. Zeitschr f d Gesamte Turbinenwesen—Aug. 30, 1907. No. 86979 D.

Centrifugal Pumps. William O. Webber. Several types of pumps and their

# MECHANICAL ENGINEERING

## Centrifugal Pumps

construction are illustrated and described. 1200 w. Engr, U S A—Aug. 1, 1907. No. 86131 C.

Centrifugal Pumps. E. F. Doty. Explains the necessary elements of the centrifugal pump, briefly reviewing its history and discussing the theory and its relation to present day practice. 2500 w. Engr, U S A—Oct. 1, 1907. No. 87326 C.

Centrifugal Pumps. Richard C. Williams. An illustrated explanation of their theory, design, and performance. 2200 w. Eng & Min Jour—Feb. 16, 1907. No. 82409.

Centrifugal Pumps. Henry F. Schmidt. Remarks on recent improvements in these pumps, with reasons why the writer thinks they will soon replace the plunger pump where the volume of water to be handled is large enough so that a high efficiency can be obtained. Ills. 2000 w. Power—March, 1907. No. 82659 C.

The Installation of Centrifugal Pumps. William O. Webber. Gives information in regard to the proper manner of installing centrifugal pumps, and concerning their capabilities. 1500 w. Eng News—Jan. 10, 1907. No. 81559.

The Operation of Governing Mechanisms on Centrifugal Pumps and Blowers (Die Wirkung von Leitvorrichtungen bei Zentrifugalpumpen und Gebläsen). W. Grun. Mathematical discussion of various types. Ills. 5000 w. Zeitschr d Ver Deutscher Ing—April 6, 1907. No. 84142 D.

High Pressure Centrifugal Pumps (Les Pompes Centrifuges à Haute Pression). André Hallet. Gives a mathematical demonstration of why simple centrifugal pumps are not suitable for high lifts and describes and discusses the designs of several compound systems. Ills. Serial. 1st part. 4500 w. All Indus—Sept., 1907. No. 87607 D.

Recent Development and Future Application of Centrifugal Pumps. D. S. Brown. A comparison of centrifugal and reciprocating pump installations. 1800 w. Engr, U S A—June 15, 1907. No. 85090 C.

Actual Efficiencies of Fans and Centrifugal Pumps. (Über die Wirkungsgrade von Ventilatoren und Zentrifugalpumpen). L. Schütt. Discussion of performances. Diagrams. 2300 w. Zeitschrift für das Gesamte Turbinenwesen—Nov. 10, 1906. No. 81843 D.

Practical Efficiency of Centrifugal Pumps (Wirkungsgrade von Zentrifugalpumpen). E. Kux. Discussion of the question on the basis of actual tests. Diagrams. Serial. 2 parts. 2100 w. Zeitschrift für das Gesamte Turbinenwesen—

## HYDRAULICS

Feb. 28, and March 9, 1907. No. 82946 each D.

Various Types of Centrifugal Pumps and the Results of Tests (Verschillende Uitvoeringen en Beproevingresultaten van Centrifugaalpompn met Vertikale Asopstelling). Chr. Feuwens. Gives tables of results of tests. Ills. 6000 w. De Ingenieur—May 18, 1907. No. 84990 D.

Test of a Rotary Pump. W. B. Gregory. Describes the plant tested, the property of the Abbeville, La., Canal Company, used to furnish water for rice irrigation; also the tests made, giving results. Ills. 3000 w. Pro Am Soc of Mech Engrs (Sup)—Nov., 1906. No. 80550.

The Roturbo Centrifugal Pump. Illustrates and describes a new type of centrifugal pump invented by E. S. G. Rees. 1600 w. Engr, Lond—May 17, 1907. No. 84586 A.

Centrifugal Pumps at the Milan Exposition, 1906. (Die Internationale Ausstellung in Mailand, 1906). W. A. Müller. Describes and illustrates centrifugal pumps, both direct and belt driven. Ills. 2000 w. Zeitschrift für das Gesamte Turbinenwesen—Nov. 10, 1906. No. 81844 D.

Remarks on Some Fluid Apparatus. John Richards. A lecture delivered at the University of California. On the force of waves, centrifugal pumps, etc. 2000 w. Cal Jour of Tech—Nov., 1906. No. 80411.

See also Turbines, under HYDRAULICS; and Turbo-Compressors, under POWER AND TRANSMISSION.

## Contraction.

On the Free Discharge of Liquids from Orifices with Defective Contraction (Ueber den Freien Ausfluss von Flüssigkeiten an Mündungen bei Unvollkommener Kontraktion). A. Jarolimek. Considers the three cases of a circular opening, a long narrow slit, and an annular orifice. Ills. 3000 w. Zeitschr d Oest Ing u Arch Ver—Aug. 9, 1907. No. 86972 D.

## Diagram.

A New Diagram for Hydraulic Calculations. Frank Foster. Gives a diagram applicable whether or not there are losses due to skin friction or eddies. 800 w. Mech Engr—Dec. 1, 1906. No. 80916 A.

## Electric Pumping.

An Electric Graving Dock Pumping Plant at Hong Kong. Illustrated description of an interesting electrical equipment recently installed, including a pair of motor driven twin parallel pumps of the horizontal type, a vertical electric

# MECHANICAL ENGINEERING

## Electric Pumping

centrifugal pump, and an electrical air pump, for exhausting the air from the two main pumps. 600 w. *Int Marine Engng*—Feb., 1907. No. 81760 C.

Electric Pumping System. Illustrates and describes the system of electrically-driven pumping-plants for water supply and mine drainage recently installed at Walhalla, V. 2500 w. *Aust Min Stand*—July 12, 1907. No. 86154 B.

Electric Pumps. D. Penman. Describes the high-speed turbine pump, and the electric three-throw pump. 1200 w. *Min Rept*—Feb. 28, 1907. No. 82749.

See also same title, under MARINE AND NAVAL ENGINEERING.

## Energy.

The Kinetic Energy of Flowing Water. L. F. Harza. A mathematical investigation made to determine about what degree of dependence can be placed on the value of the energy as usually determined, and whether more accurate methods are worth while. 600 w. *Eng News*—March 7, 1907. No. 82800.

## Excavation.

See same title, under CIVIL ENGINEERING, CONSTRUCTION.

## Fire Protection.

Automatic Sprinkler System for Fire Protection. Describes the equipment of works of the Ohio Brass Co., at Mansfield, Ohio. 1600 w. *Met Work*—Dec. 29, 1906. No. 81290.

## Friction.

The Friction of Moving Liquids (*Sugli Attriti dei Liquidi in Movimento*). Pietro Alibrandi. A mathematical and historical treatment of the subject, reviewing various investigations. 10000 w. Serial. 1st part. *Ann della Società d Ing e d Arch Ital*—Aug. 1, 1907. No. 86903 F.

## Gates.

Water Power Plants with Waste Sluices for the Utilization of High Water (*Wasserkraftanlagen mit Ejektorenschützen zur Ausnutzung von Hochwasser*). Illustrated description of installations to prevent the drowning of the turbines during periods of high water, the first installment dealing with the plant at Chèvres. 1600 w. Serial. 1st part. *Zeitschr f d Gesamte Turbinenwesen*—April 30, 1907. No. 84164 D.

Floating Gates in the Operation of Turbine Plants (*Schwimmender Schützen zur Instandhaltung von Turbinenanlagen*). A. Stoll. Illustrated description of an installation at Chèvres on the Rhone. 2000 w. *Zeitschr f d Gesamte Turbinenwesen*—April 20, 1907. No. 84160 D.

## HYDRAULICS

### Kutter Formula.

Observations to Determine the Value of "C" and "N" as Used in the Kutter Formula. J. B. Lippincott. Describes methods of lining irrigating canals in California, and gives experiments made to study the working conditions of old lined canals to be used in connection with the designing of an aqueduct for the new water supply of Los Angeles. Ills. 2500 w. *Eng News*—June 6, 1907. No. 84815.

### Pipe Velocity.

The Velocity of Water in Conduits. From *Zeit. des Ver. Deut. Ing.* Describes the installation of J. M. Voith, of Heidenheim for conducting turbine tests, and the methods. 1200 w. *Engng*—Aug. 23, 1907. No. 86733 A.

### Piping.

A Study in Piping. William J. Splan. Gives detailed sketches and description of wrought-pipe drainage in the thirteen-story "DuPont" office building in Wilmington, Del. 1700 w. *Dom Engng*—June 15, 1907. No. 85067.

### Pumping.

Pumping Without an Air Chamber. George A. Stacy. An account of such working, showing that an air chamber is of value even when not necessary to the action of the pump. Discussion. 2200 w. *Jour N Eng W-Wks Assn*—Dec., 1906. No. 81094 F.

Pump Slippage. Alba L. Holmes. Gives results of tests made for slippage, and troubles due to it. Short discussion. 2700 w. *Pro Am Water Wks Assn*—1906. No. 85810 N.

Operating Reciprocating Steam Pumps by the Dense-Air System. Snowden B. Redfield. Outlines the advantages and disadvantages of the system, showing under what conditions it will prove economical. 4500 w. *Compressed Air*—Oct., 1907. No. 87558.

See also Oil Engines, under COMBUSTION MOTORS; and Unwatering, under MINING AND METALLURGY, MINING.

### Pumping Engines.

On the Design of Machinery for Very High Pressures. J. E. Petavel. An illustrated article discussing the special difficulties encountered at very high pressures. 1200 w. *Engng*—July 26, 1907. No. 86173 A.

High-Duty and Low-Duty Pumping Engines. From a paper by Irving H. Reynolds, before the Am. Water-Works Assn., regarding the points to be considered in making a choice between high-

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## Pumping Engines

duty and low-duty types. 2500 w. Eng Rec—June 22, 1907. No. 85197.

Pumping Machinery for Dalny Water-Works. Illustrates and describes two sets of pumping engines of the vertical triple-expansion surface condensing type, which work three vertical plunger pumps. 700 w. Engr, Lond—Aug. 2, 1907. No. 86366 A.

Two-Stage Operation of a Large Pumping Engine. A. O. Doane. Describes changes made in one of the engines of the Metropolitan Water-Works of Massachusetts as to enable it to be used in pumping to high service as well as low. Ills. 1000 w. Eng News—Aug. 29, 1907. No. 86630.

New Pumping Engines of the Hamburg Water Works (Neuere Pumpmaschinen des Hamburger Wasserwerkes). Rud. Schröder. A well-illustrated description of these large pumping engines with details of their operation, coal and steam consumption, efficiency, etc. 4000 w. Serial. 1st part. Zeitschr d Ver Deutscher Ing—June 15, 1907. No. 85677 D.

Balancing of Pumping Engines. A. F. Nagle. An investigation as to the proper weight of the plungers of a vertical, triple-expansion, crank and flywheel pumping engine. 1600 w. Pro Am Soc of Mech Engrs—May, 1907. No. 84502 F.

Most Efficient Ratio of Steam Cylinders in Direct-Acting Compound Pumps. F. F. Nickel. Mathematical discussion, illustrating by examples. 700 w. Power—July, 1907. No. 85345 C.

Prevention of the Short-Stroking of Direct-Acting Duplex Pumping Engines. A. P. Blackstead. An explanation of the different ways this may be accomplished. 600 w. Eng News—Oct. 31, 1907. No. 87989.

Pump Troubles and Their Remedies. H. Jahnke. Discusses some probable causes of steam pump troubles and their correction. 1800 w. Power—Oct., 1907. No. 87269 C.

## Pumping Plants.

Pumping Machinery for the New Graving Dock, Colombo, Ceylon. Illustrations showing the machinery and general arrangement of the plant, with descriptive notes. 1000 w. Engng—May 17, 1907. No. 84577 A.

A Comparison of the First Cost and Cost of Operation of Pumping Plants Driven by Steam and Oil Engines. Francis Head. Gives a comparison of the prices submitted to the City of Philadelphia for bids on low-lift pumping machinery for the Torresdale filters. Ills.

## HYDRAULICS

1300 w. Pro Engrs' Club of Phila—Oct., 1906. No. 80234 D.

Comparative Cost of Pumping by Steam, Internal-Combustion Engines, and Electricity, Based Upon Actual Working. Charles Hawksley and Henry Davey. Read before the Engng. Con. of the Inst. of Civ. Engrs. Short discussion. 1500 w. Elec. Engr, Lond—June 21, 1907. No. 85382 A.

Foundations for Pumping Engines. Charles A. Hague. Discusses a number of cases and the conditions to be met, and the methods of successfully preparing the foundations for the engines. 5600 w. Cassier's Mag—Nov., 1906. No. 80211 B.

Mechanical Tests of Pumping Plants Used for Irrigation. R. P. Teele. A comparison of gasoline and steam outfits and of centrifugal, reciprocating, and air lift pumps. 1500 w. Engr, U S A—Sept. 2, 1907. No. 86709 C.

Pumping Plant at Portsmouth Dockyard. Illustrates and describes a salt-water pumping-plant introduced to supply the fire services, and also water for other purposes for which sea-water is as suitable as fresh. 700 w. Plate. Engng—Nov. 2, 1906. No. 80359 A.

Pumping Plant for the New South Dock, Cardiff. An illustrated detailed account of the machinery of a plant constructed to deal with an unusually large quantity of water. 1300 w. Engng—Sept. 6, 1907. No. 87077 A.

A Weber Gas-Power Pumping Plant. Illustrated description of a novel equipment for operating the water and light plant of Rockyford, Colo. 1500 w. Ir Age—Oct. 24, 1907. No. 87877.

See also Electric Pumping, under HYDRAULICS; and Pumping Stations, under CIVIL ENGINEERING, WATER SUPPLY.

## Pumps.

Modern Pumping and Hydraulic Machinery. Edward Butler. Reviews the development of pumping engines, illustrating and describing early types. 3500 w. Mech Engr—Jan. 26, 1907. No. 82137 A.

Progress in Pumps. Presidential address of Dabney H. Maury before the Illinois Society of Engineers and Surveyors. 2000 w. Eng Rec—Feb. 9, 1907. No. 82229.

Pumps and Pumping Machinery. Joseph H. Hart. Suggestions on the choice of a type for a particular purpose, and the method of installation. 2300 w. Elec Rev, N Y—Oct. 19, 1907. No. 87790.

Pumping Devices for Open Tank Serv-

# MECHANICAL ENGINEERING

## Pump Valves

ice. W. H. Wakeman. Illustrates and describes automatic devices for controlling the delivery of water to roof tanks. 1200 w. Sci Am Sup—April 13, 1907. No. 83581.

An Ancient Roman Pump. Illustrates and describes a well discovered in German Lorraine, near the village Sablon. 800 w. Sci Am Sup—April 6, 1907. No. 83464.

See also Centrifugal Pumps, Electric Pumping, and Suction Pipes, under HYDRAULICS.

## Pump Valves.

Pump Discharge Valves. (Versuche zur Bestimmung der Ausflussziffer bei Pumpenventilen). R. Baumann and L. Klein. Efficiency of various proportions for pump discharge valves is treated in detail. Illus. 4500 w. Zeitschrift Des Vereines Deutsches Ingenieure—Dec. 29, 1906. No. 81839 D.

How to Set the Valves of a Duplex Pump. F. F. Nickel. Gives simple directions, with explanatory diagrams, including also the effect and treatment of the cross-exhaust. 1200 w. Power—Oct., 1907. No. 87264 C.

## Rams.

The Hydraulic Ram (Der hydraulische Widder). — Zink. Description of leading European types, and calculations of the effects produced. Ills. 4400 w. Oest Wochenschrift f d Oeffentlichen Baudienst—Feb. 2, 1907. No. 82931 D.

Contribution to the Study of the Theory of the Hydraulic Ram (Contribución al Estudio de la Teoría de los Arietes Hidráulicos). Francisco Mirapeix. Mathematical paper. Ills. 6000 w. Serial. 1st part. Revista Tecno-Ind—March, 1907. No. 84125 D.

## Sluice Flow.

The Flow of Water Through Sluices. T. E. Thain. Brief discussion of cases and features requiring consideration. 500 w. Prac Engr—Oct. 11, 1907. No. 87826 A.

## Stream Flow.

Flood Flow in River Beds (Ueber das Fortschreiten von Hochwasseranschwellungen in Fluszläufen). Philipp Forchheimer. Mathematical paper. Ills. 5500 w. Zeitschr d Oest Ing u Arch Ver—May 3, 1907. No. 84972 D.

Methods Employed by the U. S. Geological Survey for Obtaining Winter Records of Stream Flow by Means of Current Meter Stations. Information from a paper by H. K. Barrows and Robert E. Horton.

## HYDRAULICS

## Turbines

1500 w. Engng-Con—May 15, 1907. No. 84365.

Lea's Patent Water Recorder. Illustrates and describes an instrument for measuring and recording graphically the rates of flow of water or other liquid when passing freely over weirs or through orifices. 1800 w. Mech Engr—April 27, 1907. No. 84244 A.

## Stream Lines.

Stream Lines and Their Application to Engineering Purposes. Dr. H. S. Hele-Shaw. Abstract of a paper read before the Jr. Inst. of Engrs. Explains the method of investigation and gives practical examples of its application to engineering problems. 2800 w. Mech Engr—March 2, 1907. No. 82890 A.

## Suction Pipes.

Suction Pipes. H. Aughtie. How to determine the limiting height of the suction pipe of a pump. 800 w. Mech Engr—Nov. 10, 1906. No. 80476 A.

## Theory.

Some Problems Connected with the Flow from Vessels (Alcuni Problemi sull' Efflusso dai Vasi). Pietro Alibrandi. A mathematical discussion of the whole subject of the flow of water through orifices. Ills. 8000 w. Ann della Soc Ing e d Arch Ital—Vol. XXI, No. 3. No. 84126 F.

## Turbine Governing.

Fink Method of Turbine Regulation (Regulierwiderstand bei Finkscher Turbinenregulierung). R. Camerer. Mode of controlling water turbines described and discussed. Ills. 1400 w. Zeitschrift Des Vereines Deutscher Ingenieure—Dec. 15, 1906. No. 81828 D.

Speed Regulation of High Head Water Wheels. H. E. Warren. Considers in detail the special features in the development of water power under high heads and the methods of control. Ills. 6000 w. Tech Qr—June, 1907. No. 85719 E.

Notes on the Governing of Hydraulic Turbines. Robert S. Ball. Read before the British Assn. A discussion of details of governing mechanisms for hydraulic turbines. Ills. 4000 w. Engng—Aug. 23, 1907. No. 86737 A.

Mechanical Details of the Governors of the Water-Wheel Equipment of the Kern River Plant No. 1. Arnold Pfau. Describes the generators and the exciter units, explaining the method of regulation. Ills. 2200 w. Am Mach—Vol. 30, No. 38. No. 87105.

## Turbines.

The Design of the Wheels and Buckets

## MECHANICAL ENGINEERING

### Turbines

of Turbines and Centrifugal Pumps (Die Bestimmung der Kranzprofile und der Schaufelformen für Turbinen und Kreiselpumpen). Prof. F. Prasil. Mathematical discussion of turbine design. Diagrams. Serial. 1st part. 1500 w. Schweiz Bauzeitung—Dec. 8, 1906. No. 81105 B.

Exposition of the Advantages of Turbines and Centrifugal Pumps (Eine Veranschaulichung der Vorgänge in den Turbinen und Kreiselpumpen). Egon Eickhoff. Ills. 1600 w. Conclusion of serial. Zeitschrift für das Gesamte Turbinenwesen—Jan. 30, 1907. No. 82941 D.

New Theory of Turbines (Zur neuen Theorie der Kreiselläder). H. Lorenz. Mathematical treatment; one diagram. 4800 w. Zeitschrift für das Gesamte Turbinenwesen—Feb. 9, 1907. No. 82942 D.

Remarks Upon the Practical Application of Lorenz' Theory and Discussion of the Water Flow in Centrifugal Pumps (Bemerkungen über die praktische Verwendbarkeit der Lorenz'schen Turbinentheorie und Vorschläge zur Klarstellung der Wasserbewegung in Kreisellädern). Viktor Kaplan. Diagram. 1800 w. Zeitschrift für das Gesamte Turbinenwesen—Feb. 20, 1907. No. 82944 D.

Reply to Dr. Lorenz' Essay on a New Theory of Turbines (Erwiderung auf die Abhandlung von Prof. Dr. Lorenz, etc.). F. Prasil. Mathematical treatment and discussion of article 82942. 3200 w. Zeitschrift für das Gesamte Turbinenwesen—Feb. 20, 1907. No. 82943 D.

New Theory of Turbines: Part II. Answers to Kaplan's and Prasil's Criticisms (Zur neuen Theorie der Kreiselläder II. Antwort auf die Einwürfe der Herren Kaplan und Prasil). H. Lorenz. Replies to objections to the Lorenz theory. Diagrams. 4400 w. Zeitschrift für das Gesamte Turbinenwesen—Feb. 28, 1907. No. 82945 D.

Contribution to the Discussion of Water Flow in Turbines (Zur Diskussion der Wasserbewegung in Kreisellädern). Herr Riebensahm. Discussion of Viktor Kaplan's article in this paper of Feb. 20. 1700

### MACHINE WORKS AND FOUNDRIES

### Automobile Works

w. Zeitschr f d Gesamte Turbinenwesen—April 10, 1907. No. 84159 D.

Demonstration of the Correctness of the Present Common Turbine Theory on the Basis of Brake Tests on Turbine Plants in Actual Operation (Nachweis der Richtigkeit der derzeit gebräuchlichen Turbinentheorie auf Grund von Bremsproben an ausgeführten Turbinenanlagen). Viktor Kaplan. Answer to Dr. Lorenz's article of Feb. 28. 2000 w. Serial. 1st part. Zeitschr f d Gesamte Turbinenwesen—April 30, 1907. No. 84163 D.

The Lorenz Turbine Theory (Zur Lorenz'schen Theorie der Kreiselläder). W. Bauersfeld. A mathematical paper taking exception to some of the conclusions reached by Dr. Lorenz. 2500 w. Zeitschr f d Gesamte Turbinenwesen—June 20, 1907. No. 85643 D.

Recent High-Speed Turbines (Neuere Schnellläufer-Turbinen). V. Graf and D. Thoma. Illustrates and describes improved water turbines in both Europe and America, giving efficiency curves, etc. 4000 w. Zeitschr d Ver Deutscher Ing—June 20, 1907. No. 85681 D.

Turbine Installation at Munich (Die Turbinenahlage der Isarwerke bei München). Andreas Stamm. Water-power turbines driving electric generators at the "Isarwerke." Ills. Serial. 2 parts. 1700 w. Zeitschrift für das Gesamte Turbinenwesen—Dec. 20, 1906, and Jan. 10, 1907. No. 81848 each D.

Large Modern Water Turbine Plants (Grosse moderne Turbinenanlagen). L. Zodel. Description of a 3,000 h.p. station for generating electricity at Verona, Italy. Illus. Serial. 2 parts. 3000 w. Schweizerische Bauzeitung—Jan. 26 and Feb. 2, 1907. No. 83620 each B.

See also Centrifugal Pumps and Gates, under HYDRAULICS.

#### Units.

A New Hydraulic Unit. Daniel W. Mead. Brief explanation of the "cylinder inch" and its use. 500 w. Pro Am Water Wks Assn—1906. No. 85812 N.

#### Water Meters.

See also Venturi Meter, under MEASUREMENT.

## MACHINE WORKS AND FOUNDRIES

### Arbors.

Making an Accurate Arbor. Harry A. S. Howarth. Describes method. Ills. 1000 w. Mach, N Y—July, 1907. No. 85484 C.

### Armor.

Modern Armor and Armor-Piercing

Projectiles. H. J. Jones. The present article describes the manufacture of modern armor plates. 2800 w. Engr, Lond—April 12, 1907. Serial. 1st part. No. 83884 A.

### Automobile Works.

Automobile Engine Building in a Steam

## MECHANICAL ENGINEERING

### Ball Bearings

Engine Plant. Illustrates and describes methods of the Providence Engineering Works in the manufacture of about two thousand double-opposed-cylinder automobile gas engines, with the accompanying speed change mechanism, differential gearing, and other related parts. 3500 w. Mach, N Y—April, 1907. No. 83390 C.

The New Manufacturing Plant of the George N. Pierce Co., Buffalo, N. Y. Howard S. Knowlton. An illustrated description of this new automobile manufacturing establishment, built on the site of the Pan-American Exposition grounds. 48000 w. Eng Rec—Sept. 7, 1907. No. 86789.

### Ball Bearings.

The Mechanical Design of Ball Bearings and Roller Bearings. W. S. Rogers. A critical survey of the fallacies of inventors and designers, illustrating the points of error and pointing out the sound principles of construction and the free state of the art for new manufacturing enterprise. 2500 w. Engineering Magazine—Jan., 1907. No. 81191 B.

Ball Bearings. Henry Hess. A discussion of their use in general and on automobiles in particular. Also Prof. Striebeck's reports on ball bearings for various loads. Ills. 18500 w. Pro Am Soc of Mech Engrs—June, 1907. No. 84649 F.

Designing a Three-point Ball Bearing. Describes the way to design the bearing and test the balls. 700 w. Am Mach—Vol. 30, No. 31. No. 86057.

Spherical Bearings with Few Tools. M. R. Lathrop. An illustrated explanation of how a lathe and boring mill were rigged up to handle a difficult job and the good results that were obtained. 900 w. Am Mach—Vol. 30, No. 23. No. 84799.

See also same title, under POWER AND TRANSMISSION.

### Bearings.

The Design of Bearings. Forrest E. Cardullo. Discusses the friction of journals, and results obtained from the machines for testing bearings, in the present article. 2200 w. Mach, N Y—Dec., 1906. Serial. 1st part. No. 80780 C.

A Fixture Used in Pouring White-Metal Bearings. Charles Prescott Fuller. Illustrates and describes a device carrying a pair of arbors and a series of collapsible bushings around which the metal bearings are run. 3000 w. Am Mach—Vol. 30, No. 16. No. 83780.

See also same title, under POWER AND TRANSMISSION.

### MACHINE WORKS AND FOUNDRIES

### Boiler Making

#### Bell Casting.

How Church Bells Are Cast. F. P. Lotz. An illustrated description of the process of bell-founding. 1200 w. Sci Am—April 6, 1907. No. 83459.

Bell Mixtures. On the manufacture of cast bells, the principal mixtures, methods, etc. Ills. 1200 w. Brass Wld—June, 1907. No. 85168.

The Effect of Iron on Bell Metal and a Flux for Introducing It. Charles H. Poland. Describes the writer's experience. 1000 w. Brass Wld—Oct., 1907. No. 87857.

#### Bell Yoke.

Tools for Manufacturing a Locomotive Bell Yoke. L. E. Salmon. Line engravings of a bell yoke and the fixture and small tools used in machining it, with description of work. 1000 w. Am Mach—Vol. 30, No. 33. No. 86385.

#### Boiler Making.

Steel Castings for Boiler Fittings. Abstract of a paper read by Captain Ira Harris at the meeting of the Board of Supervising Inspectors, Steamboat Inspection Service. 2500 w. Boiler Maker—April, 1907. No. 83388.

A Layout for a Boiler Maker. A. N. Lucas. Discusses flue work, patching, plugging cracks, stay-bolt work, renewing sheets in fire-boxes, building new boilers, etc. Diagrams. 2500 w. Boiler Maker—May, 1907. No. 84018.

Concerning Nipples in Sectional Boilers. Calls attention to the failure of nipples due to their not being adequately set and flared. Ills. 2500 w. Locomotive—April, 1907. No. 85257.

The Areas of Circular Segments. Gives approximate rules which give accurate enough results for general use, when the tables for computing such areas are not at hand. 3300 w. Locomotive—April, 1907. No. 85258.

Triangulation. Explains the layout of a "Y" connection. 800 w. Boiler Maker—June, 1907. No. 85007.

Layout of a Large Y Connection. Emmet S. Hegerty. Illustrated description. 1500 w. Boiler Maker—Nov., 1907. No. 87998.

How to Lay Out a Tubular Boiler. H. S. Jeffery. Gives a description, as complete as possible, of the lay out of an ordinary tubular boiler, using several different formulæ to show how each joint is found. 3000 w. Boiler Maker—Jan., 1907. Serial. 1st part. No. 81353.

Calculating Butt-Strapped Boiler Seams. J. E. Werman. Explains a shortened method of determining relative superiority

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### Boiler Works

of inner and outer sections. Ills. 900 w. Power—March, 1907. No. 82653 C.

Construction Inspection of Boilers and Engines. J. R. Thompson. The present article deals with the inspection of boiler work through all the stages of construction. Ills. 3800 w. Cassier's Mag—Feb., 1907. Serial. 1st part. No. 82285 B.

See also Pneumatic Tools, Riveters and Riveting, under MACHINE WORKS AND FOUNDRIES.

### Boiler Works.

The West Point Boiler Works. Illustrated detailed description of these Pittsburgh shops and their equipment. 2200 w. Boiler Maker—Dec., 1906. No. 80813.

Muskegon Boiler Works. Brief illustrated description of boiler shops in Michigan. 800 w. Boiler Maker—Jan., 1907. No. 81351.

Working Strength of Bolts. F. E. Cardulls. Discusses the stresses due to screwing up bolts to make them steam tight. Ills. 2700 w. Mach, N Y—Nov., 1906. No. 80166 C.

Flange Bolts. John D. Adams. Explains the writer's method of determining the number and size of bolts necessary to hold down a pillar crane. 1500 w. Mach, N Y—Dec., 1906. No. 80781 C.

### Boring.

Boring Bars and Cutters. E. A. Dixie. Describes the methods used by the Link-Belt Company. Ills. 1400 w. Am Mach—Vol. 30, No. 25. No. 85151.

A Boring, Reaming, and Facing Bar—How It Was Made. E. John. An illustrated description of how a large bar was made. 1800 w. Am Mach—Vol. 30, No. 44. No. 87979.

### Boring Mills.

A Boring and Turning Mill. Illustrates and describes a mill of exceptionally strong design, adapted for work up to 100 in. in diameter and 4 ft. long. 800 w. Engr, Lond—May 3, 1907. No. 84347 A.

Work of the Floor-plate Boring Mill. Gives photographs and description of original shop methods at the Crocker-Wheeler Elec. Co.'s works. 700 w. Am Mach—Vol. 30, No. 33. No. 86378.

### Brass Casting.

Making Brass Castings on End in Snap Flasks. J. A. Smith. Illustrates and describes the method used by the writer with success. 500 w. Brass Wld—Nov., 1906. No. 80514.

Brass Castings. J. L. Jones. Read before the Pittsburgh Found. Assn. The importance of good molding sand, metal

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### Brass Refuse

used for brass castings, mixtures, etc. 3500 w. Foundry—Feb., 1907. No. 82271.

Casting Brass on Iron. Louis Luhrsén. Describes a brass bushing cast around a throttle stem for a locomotive. Ills. 1000 w. Foundry—Feb., 1907. No. 82273.

Use of a Block of Wood in Casting Brass for Rolling. Discusses the trouble from the presence of "spills," the cause, and remedy, and the value of the wood block on the surface of the brass in the crucible. Ills. 1200 w. Brass Wld—April, 1907. No. 83927.

Regulations for the Casting of Brass. Gives draft of regulations proposed in substitution for the special rules now in force. 1000 w. Engr, Lond—July 5, 1907. No. 85596 A.

Methods of Casting Yellow Brass. C. Vickers. Considers the treatment necessary to make yellow brass castings. 1800 w. Foundry—Oct., 1907. No. 87356.

### Brass Foundries.

Healthful Conditions in the Brass Foundry. Walter B. Snow. Read before the Am. Found. Assn. Describes installations for the removal of dust and fumes. 2000 w. Eng Rec—June 15, 1907. No. 85061.

The Hygienic Aspect of Brass Melting and Casting. Erwin S. Sperry. On the dangers of metal poisoning and the diseases to which brass smelters are subject, giving rules proposed in England for maintaining brass shops in a sanitary condition. Ills. 3500 w. Brass Wld—Aug., 1907. No. 86479.

Science Applied to the Brass Industry. Andrew M. Fairlie. Read before the Am. Found. Assn. Discusses the work of the chemist and metallurgist, the problems of electroplating and other work. 2200 w. Ir Age—June 13, 1907. No. 85005.

The Langsenkamp - Wheeler Brass Works. Illustrated description of this Indianapolis plant. 1700 w. Foundry—June, 1907. No. 84597.

### Brass Oxidation.

Oxidizing Yellow Brass with the Production of a Black or Brown Color. J. W. Manson. Describes methods used by the writer and found satisfactory. 2500 w. Brass Wld—Aug., 1907. No. 86480.

### Brass Refuse.

Brass Skimmings. Explains what skimmings are, the right method of treating them, assays, etc. 1500 w. Brass Wld—June, 1907. No. 85170.

The Treatment of Brass Foundry and Brass-Rolling Mill Refuse. Erwin S. Sperry. An illustrated description of methods in use to prevent abnormal waste



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### Brazing

in brass mills. Describes the "Hill Barrel" and its use, washing methods, treatment of slags, skimmings, sweeps, etc. 4500 w. Brass Wld—July, 1907. No. 85825.

Brass Waste in Machine Shop and Foundry. Walter J. May. Briefly considers mechanical wastes which affect the costs of shops and foundries. 1200 w. Prac Engr—Sept. 13, 1907. No. 87203 A.

### Brazing.

Brazing of Iron Surfaces. John L. Bacon. Materials and methods for joining cast and wrought iron are illustrated and described. 1500 w. Engr, U S A—May 1, 1907. No. 84036 C.

### British Methods.

Advanced British Manufacturing Methods. Illustrations of interesting examples of repetition work in machine tool manufacture, with notes. 500 w. Mach, N Y—Aug., 1907. No. 86138 C.

### Buildings.

See Shops, under MACHINE WORKS AND FOUNDRIES; and Automobile Shops, Factories, Foundries, Reinforced Concrete, Roofs and Steel Buildings, under CIVIL ENGINEERING, CONSTRUCTION.

### Calipering.

Calipers and the Art of Calipering. Frank A. Stanley. A collection of selected articles dealing with various phases of this subject, with many illustrations. 28500 w. Am Mach—Vol. 30, No. 10. No. 82794.

### Cams.

Notes on Cam Design and Cam Cutting. James L. Dinnany. Calls attention to points to be considered in designing and producing satisfactory cams. Ills. 2000 w. Mach, N Y—Aug., 1907. No. 86142 C.

Simplifying a Difficult Cam Job. States the problem and the solution. Ills. 800 w. Am Mach—Vol. 30, No. 31. No. 86054.

### Car Axles.

The Art of Manufacture of Railway Car Axles. Henrik V. von Z. Loss. Describes the method used in making the standard axle of the present, and their tools, enumerating the objections to the method and steps taken to overcome the difficulties. Ills. 7000 w. Jour Fr Inst Jan., 1907. No. 81902 D.

### Car Trucks.

Steel Truck Construction and History of Steel. W. E. Symons. Briefly reviews the iron and steel industry, explaining the

### MACHINE WORKS AND FOUNDRIES

### Case-Hardening

various processes for making steel, tracing historically the evolution of trucks and giving much related information. General discussion. Ills. 10000 w. Pro S & S-W Ry Club—Nov., 1906. No. 81777 E.

### Car Wheels.

A Modern Car Wheel Casting Plant. Illustrated detailed description of the straight floor system employed in the C. M. & St. P. R. Co.'s new foundry at West Milwaukee, Wis. 3500 w. Ir Age—Nov. 8, 1906. No. 80265.

Cast-Iron Wheels and Their Chemical Composition. James Andrews. Discusses the effect of the pouring temperature, and of the composition on the quality of the wheels. 2300 w. St Ry Jour—Dec. 8, 1906. No. 80901.

Weldless Pressed Spoke Car Wheels (Nahtlos gepresste Speichenräder für Eisenbahnfahrzeuge, System Ehrhardt; ihre Herstellung und ihre Eigenschaften im Vergleich zu gewalzten Schreibrädern und geschweissten Speichenrädern). D. von Hippel. Method of manufacture described, and performance in service compared with other kinds. Ills. 3500 w. Glaser's Annalen—Dec. 15, 1906. No. 81817 D.

The Manufacture of Cast Iron Car Wheels. An illustrated review of the development of the circular floor, straight line and continuous systems, and the introduction of labor saving equipment. 3000 w. Ir Trd Rev—Feb. 7, 1907. No. 82181.

Modern Manufacture of Car Wheels (Die Moderne Fabrikation der Eisenbahn-radsätze). Arthur Boeddecker. Illustrates and describes, in the first instalment, various machines for shaping spokes. 800 w. Serial. 1st part. Eisenbahntechn. Zeitschr—April 10, 1907. No. 84167 D.

### Case-Hardening.

Chemical and Metallographical Researches on Case Hardening (Chemische und Metallographische Untersuchungen des Hartgusses). H. Wedding and Fritz Cremer. A report of an exhaustive investigation of the changes in composition and structure of steel during the case-hardening process. Ills. Serial. 1st part. 3000 w. Stahl u Eisen—June 12, 1907. No. 85627 D.

Case-hardening the Alloy Steels. E. F. Lake. Shows that selecting the best alloys, the proper carbonizing materials, and giving the correct heat treatment secures satisfactory results. 3000 w. Am Mach—Vol. 30, No. 32. No. 86199.

Case Hardening (Einsetzen oder Ober-

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## Case-Hardening

## MACHINE WORKS AND FOUNDRIES

## Castings

flächenhärtung). Discusses the various problems of case hardening, packing, heating, etc., illustrating a case-hardening oven. 4000 w. Zeitschr f Werkzeugmach u Werkzeuge—July 25, 1907. No. 86262 D.

The Case-Hardening of Mild Steel. C. O. Bannister and W. J. Lambert. Read at Vienna meeting of the Ir. & St. Inst. Reports results of investigations made of the microstructure of cemented bars, of the depth of hardness, and a few cases of the carbon content. Micrographs. 1600 w. Ir & Coal Trds Rev—Sept. 27, 1907. No. 87706 A.

Case-Hardening. G. Shaw Scott. Abstract of paper read before the Ir. & St. Inst., at Vienna. An account of research work. 3000 w. Mech Engr, Lond—Sept 28, 1907. No. 87511 A.

See also Furnaces, under MACHINE WORKS AND FOUNDRIES.

## Castings.

The Use of Chills in Making Aluminum Castings. Amos Brown. An illustrated explanation of the use of chills on heavy portions of aluminum castings instead of risers. 1000 w. Brass Wld—Dec., 1906. No. 81270.

Aluminum Castings. E. F. Lake. Reviews the history of the discovery and development of the use of the metal aluminum, discussing the physical properties, and the making of aluminum castings. Ills. 2500 w. Foundry—May, 1907. No. 84058.

Aluminum Alloy Founding Practice. Hugh Dolnar. An illustrated article describing mixtures used and precautions taken to secure sound castings. 2500 w. Am Mach—Vol. 30, No. 34. No. 86506.

Bronze Castings for Automobiles. E. F. Lake. Considers the various combinations of alloys used to produce the different grades. 3000 w. Foundry—June, 1907. No. 84596.

Result of Pouring Manganese-Bronze in a Pasty Condition. Erwin S. Sperry. An explanation of the treatment this material requires to obtain satisfactory results. Ills. 600 w. Brass Wld—Nov., 1906. No. 80516.

Overcoming Difficulties in Casting Manganese Bronze. A. B. Brown. An illustrated account of the writer's experience, and final success. 3000 w. Brass Wld—March, 1907. No. 83281.

Molding a Large Jig Casting. Jabez Nall. Illustrates and describes the method of molding entirely in cores. 1000 w. Am Mach—Vol. 30, No. 12. No. 83145.

Casting Copper. C. Vickers. Suggestions and discussion of the influence of various alloys. 1200 w. Foundry—June, 1907. No. 84598.

The Production of Malleable Castings and Their Application in Machine Construction. Dr. Richard Moldenke. Summarizes the process of making malleable cast iron and states precautions necessary to secure satisfactory results. 2200 w. Cassier's Mag—Jan., 1907. No. 81783 B.

Malleable Castings. E. L. Rhead. The present article considers the effects of different ingredients and treatments. 5500 w. Mech Engr—Aug. 3, 1907. Serial. 1st part. No. 86350 A.

The Characteristics of Foundry Iron. George Hailstone. Gives a résumé of its micro-constituents, discussing the results of mixtures of different grades and the causes of defective castings. Ills. 4500 w. Foundry—March, 1907. No. 83179.

Iron Castings—Some Causes of Failure in Service. Robert Job. Read before the Am. Soc. for Test. Materials. Gives method pursued in ascertaining defects in locomotive castings and the remedies by which they were overcome. 1200 w. Foundry—Aug., 1907. No. 86017.

Faults of Iron Castings. Forrest E. Cardullo. Considers the causes of blowholes, green sand and dry sand molding, the support of cores, etc. 1800 w. Mach, N Y—Oct., 1907. Serial. 1st part. No. 87468 C.

A New Process for Avoiding the Formation of Flaws in Heavy Steel Castings. Dr. Alfred Gradenwitz. Illustrated description of a process recently developed in Germany for use in connection with castings up to 60 tons weight. 1000 w. Prac Engr—Nov. 23, 1906. No. 80823 A.

An Interesting Process for Avoiding Sponginess in Heavy Steel Castings. Illustrated description of a process based upon the use of a deadhead or sillage piece, which is employed successfully at the Gutehoffnungschütte works for castings weighing up to 60 tons. 1000 w. Sci Am—Jan. 15, 1907. No. 81379.

A Peculiar Chilled Casting. George C. Davis. Describes a casting presenting unusual features. 1000 w. Foundry—March, 1907. No. 83178.

Chilled Castings in Iron. Walter J. May. Suggestions for the making of chilled castings. Ills. 900 w. Prac Engr—Aug. 2, 1907. No. 86349 A.

The Manufacture of Sandless Castings. John H. Shaw. Read before the Am. Found. Assn. Describes sandless molds

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### Castings

### MACHINE WORKS AND FOUNDRIES

### Cranes

and the method of operating,' stating the uses to which they are best adapted. Ills. 900 w. Ir Age—May 30, 1907. No. 84667.

Sandless Castings. John H. Shaw. Read before the Am. Found. Assn. Describes the casting of brakeshoes in permanent molds that automatically provide for expression. Ills. 1000 w. Foundry—Aug., 1907. No. 86015.

The Skim-Gate and Its Value in Making Sand Castings. Illustrates and describes the "Renshaw skim-gate," explaining its value in making clean castings. 1700 w. Brass Wld—May, 1907. No. 84454.

Accuracy and Economy in Castings. Walter J. May. Discusses methods of reducing the waste and total works charges to as low a point as possible. 1000 w. Prac Engr—Dec. 7, 1906. No. 81020 A.

Making Unusual Castings. Walter J. May. Suggestions for successful work in various kinds of castings. 1400 w. Prac Engr—Jan. 11, 1907. No. 81728 A.

Casting Rolls for Bending Boiler Plate. R. H. Palmer. Illustrates and describes the method used. 1800 w. Foundry—June, 1907. No. 84591.

False Back Repetition Casting. Walter J. May. Suggestions for making false backs or capes in plaster when economy is necessary. 1500 w. Prac Engr—May 3, 1907. No. 84335 A.

Cast Thread Fittings. Henry B. Cutler. Read before the Am. Found. Assn. Brief account of the principles and method of making gray iron castings with threads cast in them. 700 w. Foundry—July, 1907. No. 85745.

Casting Under Difficulties. Jabez Nall. Illustrates and describes the pouring a 50-ton forging machine frame with limited melting capacity and insufficient crane power. 1000 w. Foundry—Aug., 1907. No. 86016.

Defects in Foundry Practice with Especial Reference to Armature Casting (Fehler in der Giessereipraxis unter besonderer Berücksichtigung des Armaturengusses). H. Kloss. The first instalment of the serial discusses faults in construction, design, moulds and casting, and mixtures. 2300 w. Serial. 1st part. Stahl u Eisen—April 3, 1907. No. 84129 D.

The Foundry Department and the Department of Engineering Design. William A. Bole. Notes on the design and manufacture of large and complicated castings. 3800 w. Pro Am Soc of Mech Engrs—Sept., 1907. No. 87429.

See also Bell Casting, Brass Casting, Car Wheels and Shrinkage, under MACHINE WORKS AND FOUNDRIES; and Cast Iron, under MATERIALS OF CONSTRUCTION.

### Chains.

The Manufacture of a Detachable Sprocket Chain. Illustrates and describes some of the machines and methods employed. 2200 w. Am Mach—Vol. 29. No. 52. No. 81266.

Weldless Chain Manufacture. Illustrates and describes the process employed by the Handelsgesellschaft Kleinberg & Co., Vienna, Austria. 1800 w. Ir Age—May 9, 1907. No. 84277.

### Cleaning.

The Chemical Cleaning of Iron and Steel (Le Décapage Chimique du Fer et de l'Acier). E. Lemaire. A review of the methods used for cleaning iron and steel by means of acid baths in preparation for a protective covering, giving data as to loss of weight in baths of various acids. Ills. 4700 w. Génie Civil—April 27, 1907. No. 84119 D.

### Core Boxes.

Multiple Core Boxes. H. N. Tuttle. Discusses some ways of making boxes when it is customary to taper both prints. 1500 w. Foundry—Dec., 1906. No. 80942.

### Cores.

Core Making. E. L. Rhead. An illustrated article considering principally the making of dry-sand cores, and machines for straight cores. 4000 w. Mech Engr—Nov. 3, 1906. No. 80346 A.

Time Lost in the Core Room. Jabez Nall. Discusses the making of a core-box for a four-step cone pulley, and other cores. Ills. 1600 w. Foundry—March, 1907. No. 83181.

Improved Method of Turning Valve Cores. James R. Kelly. Describes a method of arrangement which enables ten or twelve valves to be molded in the same size flask previously filled by four to six. Ills. 500 w. Foundry—March, 1907. No. 83177.

The Cores Used for the Large Dredge Cutter. John Gregson, Jr. Explains details of molding of a large cutter head for a suction dredge. 700 w. Am Mach—Vol. 30, No. 19. No. 84302.

### Cranes.

The Pawling & Harnischfeger Renewal Bulletins. An illustrated article explaining a system for facilitating the ordering of repairs or renewals for broken-down cranes. 1100 w. Ir Age—May 16, 1907. No. 84366.

# MECHANICAL ENGINEERING

## Crank-Shafts

### Crank-Shafts.

Building a Large Crank-Shaft—Some of the Methods Employed. W. Burns. A short description of the tools and methods used in machining and building up of the various parts of a large marine engine crank-shaft. 1500 w. Am Mach—Vol. 30, No. 6. No. 82168.

Making a Six-throw Crank-shaft Out of a Solid Bar. John L. Bogert. Drawing and description, with cost of manufacture. 900 w. Am Mach—Vol. 30, No. 33. No. 86383.

### Crucibles.

Crucibles—Their Care and Use. John A. Walker. An illustrated article on the keeping and handling of crucibles in a manner that will insure the greatest number of heats with the least danger of accidents. 3000 w. Ind Wld—April 6, 1907. No. 83508.

### Cupolas.

Construction and Management of the Cupola Furnace (Bau und Betrieb der Kupolöfen). C. H. Jaeger. Enumeration of the leading factors controlling the design of such furnaces. 2200 w. Stahl und Eisen—March 6, 1907. No. 82949 D.

Comparative Cupola Practice. W. S. McQuillan. Read before the Am. Found. Assn. Gives tabulated results from a number of foundries, comparing results and giving conclusions. 1700 w. Foundry—July, 1907. No. 85747.

A Continuous Cupola Tuyere System. Illustrated description of a cupola equipped with Knoepfel tuyeres, which are designed to introduce a large volume of air into the furnace at a low pressure, insuring a low melting point, and uniform operating conditions. 1000 w. Ir Trd Rev—Sept. 5, 1907. No. 86776.

### Cutlery Works.

Manufacture of Cutlery at Solingen. Report by C. F. Johnston on the industrial methods adopted at Solingen, Germany, giving details on sanitation and conditions of labor. 3000 w. Mech Engr—Aug. 24, 1907. No. 86719 A.

### Cutting Metals.

On the Art of Cutting Metals. Fred W. Taylor. Presidential address. Gives information of great value gathered during years of investigation for the improvement of shop practice, and forming a review of developments in the art of cutting metals. Many plates. 17000 w. Pro Am Soc of Mech Engrs—Dec. 4, 1906. Vol. 28. No. 3. No. 80848 N.

The Art of Cutting Metals. Discus-

## MACHINE WORKS AND FOUNDRIES

## Dials

sion of the paper by F. W. Taylor, on the above subject. 6000 w. Pro Am Soc of Mech Engrs—Jan., 1907. No. 81389.

The Art of Cutting Metals. Discussion of the paper on this subject by F. W. Taylor. 10,000 w. Pro Am Soc of Mech Engrs—March, 1907. No. 83167 C.

The Art of Cutting Metals. Contribution to the discussion of paper by F. W. Taylor. 13500 w. Pro Am Soc of Mech Engrs—April, 1907. No. 83762 D.

Why Chips Cling to Screw-Machine Tools. C. L. Goodrich. Shows how improper clearance, incorrect rake, excessive speed, etc., cause the chips to heat and weld to the cutting edges of tools. Ills. 1200 w. Am Mach—Vol. 30, No. 30. No. 85881.

The Fly Cutter in Punch and Die Work. Describes an original method of producing complex shapes by a system of elementary cutters and milling-machine adjustments. Ills. 1600 w. Am Mach—Vol. 30, No. 30. No. 85880.

The Cutting of Steel by the Combustion Process. S. D. V. Burr. Describes a process perfected by Felix Jottrand, a Belgian engineer, which is reported both rapid and economical and capable of wide application. 900 w. Ir Age—Nov. 1, 1906. No. 80155.

A Burner for Cutting Metals. M. U. Schoop. Explains the principle and describes the method, giving a summary of precautions which must be taken. 600 w. Elec-Chem & Met Ind—Aug., 1907. No. 86340 C.

Cutting Metals by Oxygen (Le Coupage des Métaux par l'Oxygène). L. Guillet. A method of cutting large masses of metal is described, which consists of heating along the cutting line to a welding heat with a blowpipe and following the latter with a jet of pure oxygen which forms a very fusible oxide. Ills. 2000 w. Génie Civil—Aug. 10, 1907. No. 86925 D.

The Cutting of Iron and Steel by Means of Oxygen (Das Zerschneiden von Eisen und Stahlmassen mittels Sauerstoff). Arthur Dohmen. Describes the system of cutting iron and steel by a blowpipe and a jet of oxygen and illustrates many examples of the use which may be made of the system. 2200 w. Schiffbau—Aug. 28, 1907. No. 86957 D.

See also Tools, under MACHINE WORKS AND FOUNDRIES.

### Dials.

Making a Set of Accurate Index Dials. F. A. Stanley. Explains how a set of seven index dials was originated with the aid of some accurate fixtures. Ills. 4500

## MECHANICAL ENGINEERING

### Dies

### MACHINE WORKS AND FOUNDRIES

### Drop-Forging

w. Am Mach—Vol. 30, No. 28. No. 85565.

Making a Dial Measuring Machine. Oscar E. Perrigo. Illustrated description of the machine and its use. 2500 w. Am Mach—Vol. 30, No. 33. No. 86382.

### Dies.

Sub-Press Work at the Sloan & Chace Shops. An illustrated description of small sub-press dies built at this shop in Newark, N. J. 4000 w. Mach, N Y—Dec., 1906. No. 80782 C.

Making a Sub-press Die. H. M. Hyatt. Illustrated description of method. 1000 w. Am Mach—Vol. 30, No. 34. No. 86504.

Forging Press Dies for Making Hammers. Illustrates and describes their proper construction. 1500 w. Am Mach—Vol. 30, No. 18. No. 84038.

A Set of Shell-Drawing Dies for a Single-Acting Press. Julius F. A. Vogt. Illustrated description calling attention to new features. 1300 w. Am Mach—Vol. 30, No. 20. No. 84379.

A Built-up Blanking Die That Will Keep Its Size. Julius F. A. Vogt. Sketch, with description of how they were made. 600 w. Am Mach—Vol. 30, No. 12. No. 83143.

Dies for Making Square Pans. Julius F. A. Vogt. Sketches and description of the dies and their Use. 1200 w. Am Mach—Vol. 30, No. 34. No. 86507.

Roughing and Finishing Spring Screw Dies. Erik Oberg. Gives method of calculating the amount of material to be removed, and the diameter of the roughing die. 800 w. Mach, N Y—March, 1907. No. 82769 C.

The Construction of Split Dies for Press Work. C. F. Emerson. Illustrates and describes methods. 1000 w. Mach, N Y—March, 1907. No. 82770 C.

Novel Ideas in Die Making. Illustrates and describes practices of the Providence Mfg. & Tool Co. 4000 w. Mach, N Y—June, 1907. No. 84690 C.

### Drawing Presses.

The Calibration of Drawing-Press Tools (Die Kalibrierung der Ziehpresswerkzeuge). Karl Musiol-Warschau. Illustrated mathematical discussion of the proportioning of dies in drawing-press work. Tables. 2500 w. Serial. 1st part. Stahl u Eisen—April 3, 1907. No. 84128 D.

Making Seamless Steel Bath-tubs by Toggle Press Method. Illustrates and describes the equipment of the Pressed Steel Sanitary Co., Detroit. 1500 w. Met Work—June 1, 1907. No. 84672.

See also Dies and Press Tools, under MACHINE WORKS AND FOUNDRIES.

### Drawing Room.

Drawing-Office Practice of the General Electric Company. John W. Upp. Information regarding the sizes, titles, indexing and conventions used. Ills. 2000 w. Am Mach—Vol. 29. No. 51. No. 81072.

Quick Drafting. Charles Prescott Fuller. Recommends the universal use of the full size scale for part size drawings. 1800 w. Am Mach—Vol. 29. No. 51. No. 81076.

Graphic and Other Aids in Designing. Luther D. Burlingame. On the use of drawings and samples of various machine parts to aid draftsmen in determining sizes, etc., of component parts of machines. Ills. 1200 w. Am Mach—Vol. 30, No. 35. No. 86622.

The Making, Indexing and Filing of Drawings. J. J. Harmon. Read before the Ill. Soc. of Engrs. & Survs. Discusses this subject in detail, describing methods used by different shops. 3300 w. Eng Rec—Feb. 16, 1907. No. 82418.

### Drills.

The Work of Machine Tools (Expériences sur le Travail des Machines-Outils). C. Codron. Results of experiments on the power required for drilling various metals and alloys. Ills. 8500 w. Rev de Mécan—Feb. 28, 1907. No. 82972 E + F.

A Radial Driller. Illustrated description of a new design, one object of which is to provide a ready means of changing from cone-driven to geared speed-box drive. 500 w. Am Mach—Vol. 29. No. 50. No. 80957.

A 32-Spindle Ring Drilling Machine. Hugh Dolnar. Half-tone and construction drawing, with description. 1000 w. Am Mach—Vol. 30. No. 1. No. 81486.

The Thrust of Twist Drills. Henry Hess. Gives a diagram and a formula for thrusts, with remarks. 900 w. Am Mach—Vol. 30, No. 17. No. 83903.

The Making and Testing of Twist Drills. Fred H. Colvin. Illustrates and describes some of the tools used, methods of testing and results obtained. 5000 w. Am Mach—Vol. 30, No. 39. No. 87239.

Horizontal Drilling and Tapping Machine. Illustrated description of a large machine recently designed and built for high-speed work. 600 w. Engng—May 24, 1907. No. 84758 A.

### Drop-Forging.

Drop-Forging Methods and Interesting

# MECHANICAL ENGINEERING

## Eccentric-Rods

Work. Describes methods showing difficult forgings and their dies. Ills. 1800 w. Am Mach—Vol. 30, No. 41. No. 87545.

## Eccentric-Roda.

The Design of Eccentric Pull and Push Rods. H. M. Prevost Murphy. Gives an analysis of the two most common types. Diagrams. 1200 w. Am Mach—Vol. 30, No. 35. No. 86624.

## Electric Driving.

See same title, under POWER AND TRANSMISSION.

## Engine Works.

The Minneapolis Steel and Machinery Co. Illustrated description of a factory for the manufacture of Corliss and gas engines. 2800 w. Ir Trd Rev—Sept. 5, 1907. No. 86773.

## Exhibitions.

The Engineering and Machinery Exhibition, Olympia. Joseph Horner. Observations on machines exhibited, with illustrations. 5500 w. Engng—Sept. 27, 1907. Serial. 1st part. No. 87520 A.

Miscellaneous Exhibits at Olympia. Illustrates and describes types of piston-rings for packing; winding engines for colliery work; steam and gas-engine indicators, etc. 1800 w. Engng—Oct. 18, 1907. No. 87956 A.

Machine Tools at the International Automobile Exposition in Berlin, 1906 (Die Werkzeugmaschinen auf der Internationalen Automobil-Ausstellung, 1906, in Berlin). The first instalment illustrates and describes various types of lathes and other machines exhibited. 1200 w. Serial. 1st part. Zeitschr f Werkzeugmasch—April 5, 1907. No. 84175 D.

## Feeds.

Feeds and Feed Mechanisms. John Edgar. Considers the problem of feed variation for the lathe, for the milling machine, and for dependent and independent drives. 3500 w. Mach, N Y—Aug., 1907. No. 86135 C.

See also Speed Changing, under MACHINE WORKS AND FOUNDRIES.

## Files.

Files and Their Testing (Ueber Feilen und Ihre Prüfung). Illustrates and describes the file-testing machine built by Edward G. Herbert, Manchester, and methods of making tests. 2500 w. Zeitschr f Werkzeugmasch u Werkzeuge—July 5, 1907. No. 86261 D.

Examining and Testing Files. Oscar E. Perrigo. Considers the properties of files, especially the characteristics of good

## MACHINE WORKS AND FOUNDRIES

## Flywheels

files, and the methods of testing. 2500 w. Mach, N Y—Oct., 1907. No. 87470 C.

## File Works.

Making Swiss Files in America. An illustrated description of the plant and methods of manufacture of the American Swiss File & Tool Co., Elizabethport, N. J. 3000 w. Mach, N Y—Sept., 1907. Serial. 1st part. No. 86750 C.

## Fire-Gilding.

Mercurial or Fire-Gilding and Its Production. Illustrated description of the first form of plating known. 2800 w. Brass Wld—June, 1907. No. 85169.

## Fire Protection.

The Prevention of Fires in Industrial Establishments (La Prevenzione degli Incendi negli Stabilimenti Industriali). A description of the fire-protection arrangements and apparatus of a Milan firm, which are a model of completeness and efficiency. 3500 w. Elettricità—Aug. 30, 1907. No. 86902 D.

## Flanging.

A Large Hydraulic Flanging Press. E. A. Dixie. Illustrates and describes how the flanged work for the P. R. R. system is produced by the use of a hydraulic press and cast-iron dies. 1500 w. Am Mach—Vol. 30, No. 33. No. 86381.

## Fly Cutters.

The Fly Cutter as a Reference Gage. An illustrated article showing additional novel uses of the fly cutter. 1000 w. Am Mach—Vol. 30, No. 43. No. 87870.

## Flywheels.

A High Efficiency Fly-Wheel Joint. Illustrates and describes Haight's fly-wheel joint, giving the highest commendation of the construction. 1400 w. Am Mach—Vol. 30, No. 9. No. 82665.

The Haight Fly-wheel Joint Indorsed. C. H. Benjamin and W. H. Boehm. An illustrated article giving examples showing weakness of fly-wheel joints and suggestions for making the joints as strong as the rims. 2500 w. Am Mach—Vol. 30, No. 15. No. 83560.

Size, Weight and Capacity of Fly-Wheels for Punches. Frank B. Kleinhans. Gives a method of determining the size, weight and capacity of a fly-wheel to punch a given size hole through a given thickness of metal. Ills. 2500 w. Mach, N Y—July, 1907. No. 85482 C.

A Wire-wound Wood-rim Fly-wheel. E. E. Clock. Describes the building of these wheels. Ills. 1000 w. Power—Aug., 1907. No. 86031 C.

See also Lathes, under MACHINE WORKS AND FOUNDRIES.

# MECHANICAL ENGINEERING

## Forging

## MACHINE WORKS AND FOUNDRIES

## Foundries

### Forging.

Forging a Lathe Boring Tool. J. F. Sallows. Directions, with diagrams. 500 w. Mach, N Y—Sept., 1907. No. 86752 C.

See also Drop-Forging, under MACHINE WORKS AND FOUNDRIES.

### Forging Press.

Black Country Enterprise. J. Horton. Illustrates and describes the plant of Walter Somers & Co., Ltd., at Halesowen, Eng., which is adapted to the production of heavy work; especially describing a large forging press. 2000 w. Ir Trd Rev—June 13, 1907. No. 85029.

### Foundries.

Design of a Cast Iron Pipe Foundry. J. B. Nau. Drawing and description of some new features in a design made by the writer several years ago. 1300 w. Ir Age—April 4, 1907. No. 83434.

Foundry Design. F. A. Coleman. From a paper read before the Am. Found. Assn. Discusses the requirements and form of construction best adapted to secure desired results. 3500 w. Ir Age—July 11, 1907. No. 85481.

Overhead Tramrails for the Foundry. A. W. Moyer. Illustrated description of uses made of this labor-saving device in foundry work. 2200 w. Foundry—Oct., 1907. No. 87354.

Starting a Foundry. Walter J. May. Suggestions for the proper arrangement and equipment. 2300 w. Prac Engr—April 5, 1907. No. 83734 A.

Equipment of Pipe Foundries (Entwicklung der Anlage von Röhrengießereien). Gustav Simon. Foundry arrangements and devices in use in Austria and Germany described. Illus. 2800 w. Stahl und Eisen—Mar. 20, 1907. No. 83622 D.

Cost of Equipping Foundries for the Manufacture of Open-Hearth Steel Castings. W. M. Carr. Gives an estimate based on the daily capacity. 900 w. Ir Trd Rev—April 11, 1907. No. 83568.

New Plant of the Detroit Steel Casting Co. Illustrates and describes a well-equipped foundry of fireproof construction, where open hearth and converter steel castings are manufactured. 3000 w. Ir Trd Rev—Feb. 14, 1907. No. 82298.

New Plant of the Detroit Steel Casting Company. Illustrated description of a well-equipped foundry for the manufacture of open hearth and converter steel castings. 3000 w. Foundry—April, 1907. No. 83593.

Plant of the Scullin-Gallagher Iron & Steel Co. Illustrated description of a

large steel foundry in St. Louis. 2500 w. Foundry—June, 1907. No. 84594.

A Steel Foundry for Lumber Machinery Castings. Illustrated detailed description of a plant in Menominee, Mich., and its equipment. 2000 w. Ir Trd Rev—Aug. 1, 1907. No. 86033.

Some New Steel Foundries. Illustrates and describes plant and methods used at different foundries in England, United States and Germany. 4500 w. Ir & Coal Trds Rev—Aug. 23, 1907. No. 86743 A.

A Light Gray Iron Specialty Foundry. Illustrated detailed description of a plant in Cleveland, O. 2000 w. Foundry—Nov., 1906. No. 80158.

A Modern Grey Iron Foundry. Illustrated description of plant at Barberton, O., calling attention to novel features, and a few unique molding methods. 2200 w. Foundry—March, 1907. No. 83175.

A Modern Gray Iron Foundry. Illustrated description of the new plant of the Babcock & Wilcox Co., at Barberton, O., and of some of the molding methods. 2500 w. Ir Trd Rev—May 16, 1907. No. 84363.

Iron Foundry of the Hill Clutch Co. Illustrated description of a gray iron plant in Cleveland, O., designed for the production of power transmission machinery castings. 1500 w. Foundry—Sept., 1907. No. 86818.

A Model Pacific Coast Iron Foundry. H. Cole Estep. An illustrated account of the rapid reconstruction of the plant of the Olympic Foundry Co., which was wrecked by a landslide. 1800 w. Foundry—Oct., 1907. No. 87352.

The Iron Foundry of the Firm of H. Bovermann's Successors (Die Eisengießerei der Firma H. Bovermann Nachf.). Illustrated description of this malleable and gray-iron foundry. 3500 w. Stahl u Eisen—Sept. 4, 1907. No. 87614 D.

A Foundry for Bench Work. W. J. Keep and Emmet Dwyer. Brief illustrated description of the new foundry of the Michigan Stove Co., Detroit. 1000 w. Pro Am Soc of Mech Engrs—Oct., 1907. No. 87884.

The American Cast Iron Pipe Company's Foundry. Illustrated description of this new plant at Birmingham, Ala. 2500 w. Ir Age—Feb. 7, 1907. No. 82161.

Malleable Cast Iron Foundries (Einiges über Temperiessereien). W. Müller. Discusses the production of malleable cast iron in crucible, cupola, converter and reverberatory furnaces. Ills. 3200 w. Stahl u Eisen—Aug. 28, 1907. No. 86934 D.

The New Foundries of the Holwell

# MECHANICAL ENGINEERING

## Foundries

## MACHINE WORKS AND FOUNDRIES

## Foundry Practice

Iron Company, Limited. Illustrated description of new English foundries near Melton Mowbray. 4500 w. Ir & Coal Trds Rev—Feb. 8, 1907. No. 82475 A.

Foundry Department of the Lunkenheimer Company, Cincinnati, O. Illustrated detailed description. 1700 w. Foundry—Nov., 1906. No. 80159.

The Foundries of the Atlas Engine Works, Indianapolis. Brief illustrated descriptions of the light and heavy work foundries. 1200 w. Ir Trd Rev—July 11, 1907. No. 85526.

Messrs. R. Stephenson and Co.'s Foundry, Hebburn. Plan showing the position and arrangement, with illustrations and short description. 800 w. Engng—Aug. 16, 1907. No. 86600 A.

The Foundry Using Moulding Machines of the Aplerbecker Ironworks, Brüggmann, Weyland and Co. in Aplerbeck (Die Giesserei für Formmaschinenbetrieb der Aplerbecker Hütte, Brüggmann, Weyland and Co. in Aplerbeck). An illustrated description of this foundry in which all moulding is done by machines. 2500 w. Stahl u Eisen—Aug. 7, 1907. No. 86931 D.

See also Brass Foundries and Car Wheels, under MACHINE WORKS AND FOUNDRIES.

### Foundry Costs.

How Can Foundry Costs be Reduced (Wie Können die Produktionskosten einer Giesserei Herabgezogen Werden)? E. Freytag. Discussion of foundry economy and management. Tables. 2000 w. Stahl u Eisen—Nov. 1, 1906. No. 86677 D.

The Reduction of Foundry Costs. H. Cole Estep. Discusses in detail the problem of cost production. 2800 w. Foundry—Dec., 1906. No. 80939.

### Foundry Furnaces.

Reverberatory Furnace for the Production of Malleable Castings. (Die Verwendung des Flammofens in der Giesserei, insbesondere zur Schmelzung von schmiedbarem Guss). Geilenkirchen-Hörde. Description of various forms of furnace used in England, Germany and the U. S. Illus. Serial. 3 parts. 7400 w. Stahl und Eisen—Jan. 2, 9 and 16, 1907. No. 81808 each D.

Melting in an Oil Furnace. F. S. Fasig. An account of the writer's success. 1000 w. Foundry—Feb., 1907. No. 82272.

Melting Iron for Foundry Purposes. E. L. Rhead. Deals with appliances for melting. Ills. 2500 w. Mech Engr—Oct. 19, 1907. Serial. 1st part. No. 87952 A.

See also Cupolas and Furnaces, under MACHINE WORKS AND FOUNDRIES.

### Foundry Mixtures.

Fluxes and Alloys. Alexander E. Outerbridge, Jr. Read before the Pittsburgh Found. Assn. Discusses the function of fluxes in the cupola, and their effect upon the melting and properties of pig iron; and a discussion of alloys of metal with cast iron. 4000 w. Ir Age—April 11, 1907. No. 83559.

Foundry Pig Iron Specifications. Herbert Pilkington. Read before the British Found. Assn. Discusses conditions in connection with the production of pig iron, grading, silicon variation, sulphur, remelting, etc. 3000 w. Foundry—June, 1907. No. 84595.

Foundry Fluxes or Deoxidants. Walter J. May. Suggestions for fluxing iron, copper alloys, and other metals. 700 w. Prac Engr—June 28, 1907. No. 85493 A.

Foundry Mixtures. Dr. Bradley Stoughton. Read before the Pittsburgh Found. Assn. An illustrated article discussing the effects of various impurities on pig iron. 3500 w. Ir Age—Nov. 15, 1906. No. 80386.

Foundry Mixtures. Bradley Stoughton. Read before the Pittsburgh Found. Assn. Considers the difference between iron and steel castings, shrinkage, porosity, workability, strength, etc. Ills. 3000 w. Foundry—Jan., 1907. No. 81390.

Melting Iron for Castings. Bradley Stoughton. Discussion of cupola practice, methods of charging and calculating mixtures, tuyere area, fuel, etc. 5300 w. Foundry—Oct., 1907. No. 87351.

Manganese in Cast Iron. Herbert E. Field. Read before the Am. Found. Assn. Discusses the effects of the use of manganese in increasing carbon and decreasing and neutralizing sulphur. 2000 w. Foundry—Aug., 1907. No. 86020.

The Use of a Heated Foundry Mixer. J. B. Nau. Presents the advantages of the heated mixer, describing a design by the writer. 700 w. Ir Age—May 23, 1907. No. 84487.

### Foundry Practice.

Science in the Foundry. William W. Hearne. Read before the Am. Assn. for the Adv. of Science. Shows why it is necessary for foundrymen to know the analysis of the pig iron or the ore and fuel that are used. 1200 w. Eng News—Feb. 21, 1907. No. 82533.

Early History of Iron Founding. Robert Buchanan. From a presidential address to the S. Staffordshire Ir. & St.



## MECHANICAL ENGINEERING

### Foundry Practice

Inst. 4800 w. Ir & Coal Trds Rev—Oct. 4, 1907. No. 87708 A.

Some Hints on Melting Metals and Alloys. Walter J. May. Suggestions for securing the least cost in fuel, loss of metal, and least cost in crucibles. 2000 w. Prac Engr—Nov. 2, 1906. No. 80344 A.

Machine Shop Ideals in Foundry Operation. W. W. McCarter. Discusses economy in foundry practice and gives suggestions helpful in modernizing an old-fashioned plant. 3000 w. Engineering Magazine—Feb., 1907. No. 81893 B.

Foundry Blower Practice. Walter B. Snow. Considers types of blowers and foundry practice. 6000 w. Pro. Am Soc of Mech Engrs—Oct., 1907. No. 87886 C.

Driving a Foundry Fan. Walter J. May. Calls attention to points to bear in mind. 800 w. Prac Engr—Oct. 4, 1907. No. 87584 A.

See also Castings, Molding, Patterns, Riddle and Sand Blast, under MACHINE WORKS AND FOUNDRIES.

### Furnaces.

Fisher's Improvement in Metal Furnaces. Illustrated description of an improved melting furnace which is considered quite a departure from common practice. 2000 w. Ind Wld—Nov. 3, 1906. No. 80221.

Heating Furnaces for Shipbuilding (Wärmöfen in Schiffbaubetrieben). Hr. Gille. Illustrated description of coal, gas and other kinds of furnaces for heating metal parts used in shipbuilding. Serial. 1st part. 1800 w. Schiffbau—Nov. 28, 1906. No. 81119 D.

Two Novel Heating Furnaces. Illustrated description of two furnaces for tempering small duplicate parts in large quantities. 1000 w. Ir Age—Feb. 14, 1907. No. 82265.

The Air Furnace in Grey-iron Founding. Hugh Dolnar. Showing its advantages where it is desirable to obtain uniform mixtures for any work and giving details of a successful furnace. Ills. 1200 w. Am Mach—April 18, 1907. No. 83781.

The Case-Hardening Furnace. J. F. Sallows. Considers its use for hardening, coloring and mottling. Ills. 1500 w. Mach, N Y—June, 1907. No. 84689 C.

The Oil Furnace vs. the Sheeler-Hemsher Improved Crucible Furnace. W. H. Kane. Read before the Am. Found. Assn. On the development of the Sheeler-Hemsher forced draft crucible furnace. 1500 w. Found—July, 1907. No. 85749.

Side-Fired Furnaces for Annealing, etc.

### MACHINE WORKS AND FOUNDRIES

### Galvanizing

Walter J. May. Illustrates and describes various types of side-fired furnaces and annealing ovens. 1000 w. Prac Engr—Aug. 30, 1907. No. 86856 A.

New Drying Stoves for Iron and Steel Foundries (Neuerungen an Trockenkammern für Eisen- und Stahlgiessereien). E. Freytag. Illustrated description of several types, particularly gas-fired stoves. 2000 w. Stahl u Eisen—July 24, 1907. No. 86230 D.

Electrically Heated Annealing and Hardening Furnace. Illustrated description of a German furnace which assures perfect control of temperature. 900 w. Am Mach—Vol. 30. No. 1. No. 81481.

Electrically Heated Re-heating and Tempering Furnaces (Der Glüh- und Härteofen mit Elektrisch Geheiztem Schmelzbad). L. M. Cohn. A paper dealing principally with small furnaces, read before the Elektrotechnische Verein in Vienna. Ills. 2800 w. Serial. 1st part. Elektrotech u Maschinenbau—Aug. 18, 1907. No. 86967 D.

See also Foundry Furnaces and Tempering, under MACHINE WORKS AND FOUNDRIES.

### Galvanizing.

Cold Galvanizing for Iron and Steel. A. Frederick Collins. States the advantages and cost as compared with the hot process. 1000 w. Sci Am—Jan. 26, 1907. No. 81928.

The Manufacture of Galvanized Sheet Iron (Fabrication de la Tôle Galvanisée). The Machet machine for galvanizing sheet iron, its construction and operation, and a comparison of this process with ordinary methods. Ill. 4400 w. Mem Soc Ing Civ de France—Feb., 1907. No. 83675 G.

The Art of Galvanizing. Alfred Sang. Read before the Am. Found. Assn. Remarks on corrosion and methods of protecting iron and steel, metallic coatings and their behavior, action of metals in contact, specifications for an ideal coating, cold, hot and dry galvanizing, etc. 5000 w. Ir Age—May 23, 1907. Serial. 1st part. No. 84486.

Theory and Practice of Sherardizing. Alfred Sang. Discusses this dry galvanizing process, especially in its theoretical aspects. 3000 w. Elec-Chem & Met Ind—May, 1907. No. 83981 C.

Galvanizing by the Zinc Bath and Electrolytic Methods (Zingage à Chaud et Galvanisation Electrolytique). A comparison of the two methods as to economy and efficiency, showing the electrolytic

# MECHANICAL ENGINEERING

## Gauges

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## Gears

method to be greatly superior. 2000 w. *Métallurgie*—June 19, 1907. No. 85611 D.

### Gauges.

Adjusting Gauges by Peening. W. H. Booth. Suggestions for keeping gauges properly adjusted, stating objections to peening. 800 w. *Am Mach*—Vol. 30, No. 31. No. 86052.

A New Swedish Combination Gaging System. E. A. Dixie. An illustrated account of a new system of gauging and of originating shop sizes. 1800 w. *Am Mach*—Vol. 30, No. 38. No. 87104.

Gaging Systems and Gages. Joseph V. Woodworth. Calls attention to the design, construction, use, and application of measuring and testing instruments. 2000 w. *Ir Trd Rev*—June 13, 1907. No. 85032.

Screw Gauges. Extracts from the Engineering Standards Committee's report on British Standard Systems for limit gauges for screw threads, with editorial. 1800 w. *Engr, Lond*—Sept. 13, 1907. No. 87220 A.

### Gear Cutting.

Making Small Relieved Gear Cutters in the Sloan & Chace Shops. Illustrates and describes the methods used in these shops. 3000 w. *Mach, N Y*—Jan., 1907. No. 81413 C.

A European Bevel Gear Generating Machine. Illustrates and describes a bevel gear planing machine built at Mulhouse, Alsace, which shows features of considerable interest. 1600 w. *Mach, N Y*—Jan., 1907. No. 81414 C.

Gear-Cutting Machines. Illustrated description of specific tools, with discussion of methods employed to produce accurate spur teeth. 17500 w. *Engr, Lond*—Nov. 23, 1906. No. 80839 A.

Gear Cutting Machines. Illustrates and describes machines used for cutting of very high ratio spiral or helical gears, which require great accuracy. 700 w. *Engr, Lond*—Dec. 7, 1906. No. 81033 A.

A Novel Gear Shaper. Frank C. Hudson. Illustrates the machine, explaining its workings. 700 w. *Am Mach*—Vol. 30, No. 40. No. 87381.

The Chamban Bevel-Gear-Cutting Machine (Machine a Tailler les Engrenages Coniques de MM. Chamban et Cie. à Lyon). G. Eude. Illustrated description. 2000 w. *Rev de Mécanique*—Nov. 30, 1906. No. 81129 E + F.

A French Machine for Cutting Bevel Gears. G. Eude. Trans. from *Revue de Mécanique*. Illustrated description of a machine for cutting bevel gears at a single

cut. 2000 w. *Am Mach*—Vol. 30, No. 36. No. 86810.

Cutting Bevel Gears with a Rotary Cutter. H. P. Fairfield. Illustrated description of the process of forming the teeth of a bevel gear by milling them with a rotary cutter. 3000 w. *Mach, N Y*—Oct., 1907. No. 87469 C.

Two German Bevel Gear Shaping Attachments. Illustrates and describes two devices designed for planing bevel gears, using templets or cams in giving the proper shape to the tooth. 1500 w. *Mach, N Y*—May, 1907. No. 84021 C.

Modern Gear-Cutting Machinery. Joseph Horner. Considers present developments in these machines, illustrating and describing special machines of interest. 4000 w. *Cassier's Mag*—April, 1907. No. 83334 B.

### Gearing.

Design of an All Gear Drive for a Lathe or Similar Tool. W. S. Gille. Presents a solution of a typical example. Ills. 1400 w. *Sib Jour of Engng*—Jan., 1907. No. 81915 C.

The Mechanism of Power Transmission from Electric Motors. Wilfred L. Spence. Presents possible alternatives to the commoner methods, showing illustrations of good and bad practice, and also typical applications of each system. 9000 w. *Trans Inst of Engrs & Shipbldrs in Scotland*—Feb. 19, 1907. No. 83300 N.

Loss of Power by Transmission with Geared Wheels. John Batey. A study of the frictional resistance of toothed gear drives. 2300 w. *Prac Engr*—March 1, 1907. No. 82884 A.

Gear Ratios for Motor Drives. W. Owen. Gives a table of gear changes for motor drives, explaining its use. 600 w. *Am Mach*—Vol. 30, No. 13. No. 83305.

A Comparison of the Efficiency of Two Trains of Spiral Gears. Gives in detail calculations for determining which is the better arrangement of two different sets of spiral gears for gas engines. Ills. 1600 w. *Mach, N Y*—June, 1907. No. 84691 C.

### Gears.

Diagram for Finding the Strength of Bevel Gears. H. T. Millar. Gives diagram, illustrating its use by examples. 600 w. *Am Mach*—Vol. 30, No. 24. No. 85011.

A Skew Bevel Gear Model. John F. Arthur. Gives model and description. 1200 w. *Mach, N Y*—Jan., 1907. No. 81412 C.

Spiral Gearing by the Hindley Process. Illustrates and describes an extension of

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the Hindley principle to cover gears of low speed ratio with large increase in area of contact. 1000 w. Am Mach—Vol. 30, No. 20. No. 84374.

Complete Graphical Solution of Spiral Gears. E. H. Fish. Gives an explanation of graphical methods for solving all problems without mathematics. 1700 w. Am Mach—Vol. 29, No. 48. No. 80762.

Calculating the Dimensions of Worm Gearing. Ralph E. Flanders. A compilation of rules. Ills. 2500 w. Mach, N Y—Aug., 1907. No. 86137 C.

Spur Wheels with Circular Teeth. A discussion of the approximation of the cycloidal and involute forms, with the minimum of reference to the primary form. 2500 w. Engr, Lond—May 31, 1907. No. 84898 A.

Design of Helical and Herringbone Gears. Charles H. Logue. Explains how helical gears are designed by using simple formulæ and their application to the herringbone gear. 2200 w. Am Mach—Vol. 30, No. 43. No. 87869.

Calculations Respecting Epicyclic Wheel Trains. Francis J. Bostock. Gives derivation of formulæ for several usual types, and extension of the method of analysis to a somewhat complex epicyclic train. 1800 w. Diagrams. Am Mach—Vol. 30, No. 20. No. 84375.

Machine-molded Teeth on Large Cast Gears. An illustrated article showing how the teeth of gears are machine-molded from a simple tooth block, and some large herring-bone gears. 2500 w. Am Mach—Vol. 30, No. 37. No. 86884.

Some Memories of English Gears. W. H. Booth. Remarks on early methods of design and the forms and proportions used. 2500 w. Am Mach—Vol. 30, No. 40. No. 87382.

Interference in Involute Gears. C. C. Stutz. Gives a graphical demonstration, formulæ and diagrams. 800 w. Am Mach—Vol. 30, No. 41. No. 87544.

Collier's Ball Worm Gear. W. H. Booth. Illustrated description of a curious form of worm gear devised for the purpose of a direct drive in automobiles, as well as for a speed-change gear. 1000 w. Am Mach—Vol. 30, No. 42. No. 87734.

Laying Out and Machining Elliptical Gears. Gives the writer's experience in the construction of single-lobe gears. Ills. 1300 w. Am Mach—Vol. 30, No. 14. No. 83439.

Calculations Respecting Epicyclic Wheel Trains. W. Owen. Gives a rule applicable to both spur- and bevel-gear-

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epicyclics, illustrating its application by examples. 1000 w. Am Mach—Vol. 30, No. 32. No. 86198.

Hobs for Worm Gears. John Edgar. Suggestions on the design and proportions of the hob. 1500 w. Mach, N Y—Sept., 1907. No. 86754 C.

Making Worms in a Molding Machine. Robert Patten. Half-tones and sketches showing the special devices used in the work. 1100 w. Am Mach—Vol. 30, No. 16. No. 83779.

A Standard for Short Involute Gear Teeth. Charles H. Logue. Considers the defects of the present system and presents a proposed system. 1800 w. Am Mach—Vol. 30, No. 23. No. 84796.

## Green Gold.

Green Gold Deposits and How They Are Produced. Explains methods of plating, giving solutions for light green, and for dark green deposits. Ills. 1200 w. Brass Wld—July, 1907. No. 85827.

## Grinding.

Speeds on the Grinding Machine. H. F. Noyes. A brief study of speed conditions necessary to obtain the greatest output from a grinding machine, giving results of tests. 1500 w. Am Mach—Vol. 30, No. 34. No. 86505.

The Grinding of Woodworking Tools. C. C. Bosworth. Considers the grindstone and other abrasives, their peculiarities and their efficiencies. 3300 w. Woodcraft—Oct., 1907. No. 87402.

Economies and Advantages of Grinding. H. Darbyshire. Considers the selecting of proper wheels, keeping them in good condition, and using them at the right pressure and speed. 4500 w. Am Mach—Vol. 30, No. 42. Serial. 1st part. No. 87736.

Improved Methods of Dust Prevention in the Grinding Trades. Samuel R. Bennett. Describes apparatus, explaining the principles for a wet method of "racing" grindstones when first hung, and an improved hood for catching dust, etc., in the processes of dry grinding. Ills. 2200 w. Jour Soc of Arts—Aug. 30, 1907. No. 86849 A.

See also Abrasives, under MATERIALS OF CONSTRUCTION.

## Grinding Machines.

The Dahl Automatic Drill Grinder. An illustrated description of an automatic machine for sharpening twist drills. 1000 w. Ir Age—Jan. 10, 1907. No. 81513.

5 x 48-Inch Automatic Sizing Grinder. Illustrated description of a machine having an electrically controlled feed and

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sizing device for enabling duplicate work to be automatically ground. 2800 w. Am Mach—Vol. 30, No. 27. No. 85463.

A Machine for Grinding Concave Friction Disks. H. F. Noyes. Illustrated description of a new application for the grinding machine, designed to grind the friction disks used to obtain speed variation in the reversal mechanism of the Landis grinding machine. 800 w. Am Mach—Vol. 29, No. 47. No. 80552.

Vertical Spindle Surface Grinder. Illustrated detailed description of a machine of novel design and construction, utilizing a large cup wheel for rapidly and accurately grinding flat surfaces. 2500 w. Am Mach—Vol. 30, No. 31. No. 86051.

Grinding Cutters for Rotary Planers. John Riddell. A wood grinding machine which automatically grinds every tooth alike and gives them all the correct clearance is illustrated and described. 700 w. Am Mach—Vol. 30, No. 39. No. 87242.

A New Universal Grinding Machine. Illustrated description of a machine being shown at the Olympia exhibition. 2200 w. Engr, Lond—Sept. 27, 1907. No. 87531 A.

Universal Grinding Machines (Universal-Schleifmaschine). Illustrated detailed description of machine and methods of use. 4500 w. Serial. 3 parts. Zeitschr f Werkzsgmaschinen u Werkzeuge—Sept. 5, 15 and 25, 1907. No. 87643 each D.

## Guns.

Napier's Barrette Facing Machine. Illustrations, with brief description, of a powerful machine for facing the gun-roller paths and surface for circular racks, as well as the upper faces of the barbets of warships. 400 w. Engng—Oct. 26, 1906. No. 80307 A.

The U. S. Naval Gun Factory at Washington, D. C. H. J. Kennedy. Gives the history and an illustrated description of these works and their equipment. 6000 w. Am Mach—Vol. 30. No. 3. Serial. 1st part. No. 81665.

Birmingham Small Arms. Illustrated description of this English plant for the production of these weapons, and some of the machines used. 5000 w. Engr, Lond—May 10, 1907. No. 84449 A.

The Ordnance Department as an Engineering Organization. William Crozier. An address delivered at the dedication of the Engineering Societies' building in New York, April 18, 1907. Ills. 8000 w. Pro Am Soc of Mech Engrs—June, 1907. No. 84644 F.

105-Millimetre and 120-Millimetre Quick-Firing Field Howitzers. Illustrated

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description of howitzers embodying the Ternstrom device for controlling automatically the length of recoil. 3000 w. Engng—May 10, 1907. No. 84443 A.

The Coventry Ordnance Works, Limited. An illustrated description of the various establishments of this great undertaking. 3000 w. Engr, Lond—May 31, 1907. Serial. 1st part. No. 85000 A.

## Hammers.

Electrically-Operated Pneumatic Hammers. Frank C. Perkins. Illustrates and describes such hammers, giving samples made in England, Germany, and the United States. 700 w. Sci Am Sup—Dec. 15, 1906. No. 80977.

Fairbanks-Morse Pneumatic Hammers. Illustrates and describes a recent patent which was based on an extensive series of experiments. 1000 w. Ir Age—Feb. 14, 1907. No. 82263.

Pneumatic Hammers (Note sur les Frappeurs Pneumatiques). A. Baril. Comprehensive review of the development and construction of these tools and of their manifold uses. Illus. 4700 w. Revue de Mécanique—Jan., 1907. No. 82342 E + F.

108-Ton Pneumatic Hammer. A brief account of the Terni Steel Works, in Italy, with an illustrated description of this hammer and its operation. 1500 w. Engr, Lond—March 8, 1907. No. 83123 A.

Compound Pneumatic Hammers. Illustrates and describes a recent design of English manufacture, giving interesting details of tests. 900 w. Engr, Lond—July 19, 1907. No. 86001 A.

Compressed Air for Steam Hammers. Frank Richards. Considers the economy and expediency of employing compressed air for driving steam hammers, indicating the conditions under which it is advisable. 2500 w. Compressed Air—Aug., 1907. No. 86402.

A Driving Mechanism for Percussion Machines. M. Ed. Sauvage. Trans. from *Bul. of Soc. d'Encour. pour l'Ind. Nat.* Illustrated description of a French invention in which a crank-driven hammer is free at the instant of striking. 1400 w. Am Mach—Vol. 30, No. 23. No. 84798.

## Industrial Locomotives.

Industrial Locomotives (Die Baulocomotiven). A. Doeppner. Gives details of industrial locomotives of various powers and compares them with horses as regards cost of haulage. Ills. 2000 w. Zeitschr Ver Deutscher Ing—April 27, 1907. No. 84149 D.

## Ingot Molds.

Note on the Distribution of Sulphur in

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## Inspection

Metal Ingot Molds. J. Henderson. Calls attention to the fact that much more sulphur is found in the tops of ingot molds, giving results of sampling from the top and bottom, and other matters of interest. 600 w. *Ir & Coal Trds Rev*—May 10, 1907. No. 84617 A.

## Inspection.

The Relation of Inspection to Money-Making Shop Management. A. D. Wilt, Jr. An explanation of the possibilities of a well-planned system of inspection, what it aims to accomplish, and some plans of inspection. 5000 w. *Engineering Magazine*—Feb., 1907. No. 81895 B.

## Jigs.

Drill Jigs. E. R. Markham. States the requirements of such tools, and considers their design and manufacture. 2000 w. *Mach*, N Y—Nov., 1906. Serial. 1st part. No. 80169 C.

Special Tools for Drilling Holes in Mine and Percussion Fuses and Firing Rings. W. R. Bowers. Illustrates and describes some special jigs for this work. 1200 w. *Mach*, N Y—Nov., 1906. No. 80168 C.

A Boring and Drilling Jig and Its Operations. H. F. Noyes. Illustrated description. 500 w. *Am Mach*—Vol. 30. No. 1. No. 81487.

Pneumatic Clamp Drilling Jig. O. C. Bornholt. Illustrated description of a pneumatic clamp drilling jig which was designed for holding small castings, pinions, spur gears, pulleys, etc., for reaming or drilling. 700 w. *Mach*, N Y—April, 1907. No. 83393 C.

Correcting a Drilling Jig. Walter Gribben and Gus Weinmann. Explains how an accurate job was done with common measuring appliances. 2000 w. *Am Mach*—Vol. 30, No. 17. No. 83901.

A Milling Jig for Connecting-rods and Straps. Grover Roy. Describes the construction and use of a convenient jig. Ills. 900 w. *Am Mach*—Vol. 30, No. 38. No. 87111.

Improving a Milling Jig. George G. Little. Sketches and notes showing how a defective jig was made to give less trouble. 1000 w. *Am Mach*—Vol. 30, No. 21. No. 84491.

## Keys.

Solid Keys. J. J. Siebert. Describes the working of keys of the worms, gears, worm-wheels, etc., of sights for naval guns. Ills. 600 w. *Am Mach*—Vol. 29. No. 51. No. 81075.

## Labor.

The Promotion of Employees. J. F.

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Gairns. Considers the relative importance of the various qualifications for promotion, aiming to give the main considerations which should govern an employer's policy. 4000 w. *Cassier's Mag*—Sept., 1907. No. 86615 B.

## Lapping.

Lapping. E. A. Johnson. Describes methods used in lapping metals. Ills. 1700 w. *Am Mach*—Vol. 30, No. 37. No. 86886.

## Lathes.

Purchasing a Lathe. W. T. Sears. The importance of knowing what work the lathe is to do, the treatment it is likely to receive, etc. 1400 w. *Am Mach*—Vol. 30, No. 13. No. 83304.

Some Engine-lathe Details. Illustrates and describes details of bed, headstock, and carriage apron. 1000 w. *Am Mach*—Vol. 30, No. 15. No. 83562.

The Development of the Lathe (Die Entwicklung der Schnelldrehbänke). A historical sketch of the evolution of the lathe and lathe practice. Tables. 2000 w. *Zeitschr f Werkzeugmasch*—April 25, 1907. No. 84176 D.

Five Years' Progress in Engine Lathe Design. Illustrates and describes work of the Lodge & Shipley Machine Tool Co., Cincinnati, O. 1600 w. *Ir Age*—Oct. 31, 1907. No. 87995.

A Multiple-Spindle Tailstock for Turret Work on an Engine Lathe. Oscar E. Perrigo. Illustrates and describes a very useful and economical attachment which can be made in the shop. 1500 w. *Am Mach*—Vol. 30, No. 35. No. 86626.

Reciprocating Attachment for Engine Lathes. E. Beck. Illustrated detailed description. 1400 w. *Am Mach*—Vol. 30. No. 44. No. 87978.

A New Pratt & Whitney Lathe. Illustrated description of this new 16-in. engine lathe recently brought out. It is intended for tool-room use and for high-class manufacturing. 2500 w. *Ir Age*—Feb. 28, 1907. No. 82650.

The New Pratt & Whitney Turret Lathe. Illustrated description of an open turret lathe, designed for handling both bar stock and castings and performing a variety of work. 4500 w. *Ir Age*—June 27, 1907. No. 85292.

Driving-Wheel Tire Lathe. Illustrated description of a heavy chucking lathe for driving wheels, having a capacity of from six to ten pairs of tires per ten-hour day. 1200 w. *Engr*, Lond—Dec. 28, 1906. No. 81548 A.

Fly-Wheel Boring, Turning, and Boring Lathe. Illustration and brief de-

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scription of a lathe for dealing with gas-engine and other fly-wheels, capable of finishing a fly-wheel at one setting, six tools being in operation at once. 500 w. Engr, Lond—Jan. 11, 1907. No. 81755 A.

The Lo-swing Lathe and Some of Its Work. Illustrated description of a lathe and its work as used in a Newark, N. J., shop. 1000 w. Am Mach—Vol. 30, No. 36. No. 86811.

The Bullard Vertical Turret Lathe. Illustrated description of a machine designed to perform rapidly all kinds of turret lathe chucking work. 4000 w. Ir Age—Oct. 3, 1907. No. 87376.

Motor-driven Automatic Turret Lathe. D. H. Parker. Illustrated description of a machine using automatically controlled variable-speed motors for operating the spindle and cam drum shaft at any desired speed. 700 w. Am Mech—April 18, 1907. No. 83782.

Motor Drive for Lathes. Illustrates and describes several interesting applications. 1200 w. Ir Age—May 9, 1907. No. 84276.

Brummond's Screw-Cutting Lathes. Illustrated description. 2000 w. Engng—Sept. 20, 1907. No. 87343 A.

See also Feeds, under MACHINE WORKS AND FOUNDRIES.

## Locomotive Works.

The Locomotive Works of Beyer, Peacock, and Co., Limited. An illustrated article giving the history of the development of these English works. 2700 w. Engng—Jan. 4, 1907. Serial. 1st part. No. 81648 A.

Baldwin Locomotive Works. John V. Martenis. A brief sketch reviewing the development of these works. Ills. 1600 w. Engrs' Soc of Univ of Minn—Year Book, 1907. No. 84626 N.

## Machine Details.

A Factor in the Design of Machine Details. T. E. Stanton. Presents experimental evidence giving definite numerical results as to the loss of strength to be anticipated from such changes of section as are common in machine design when using the ordinary materials of construction. Ills. 1200 w. Engng—April 19, 1907. No. 84000 A.

## Machine Foundations.

A Modern Foundation for Heavy Tools. Illustrated description of the system of putting in foundations for heavy tools, used by Norton Grinding Co., of Worcester, Mass. 700 w. Am Mach—Vol. 30, No. 10. No. 82793.

## Machine Tools.

Experiments on the Work of Machine Tools (*Expériences sur le Travail des Machines-Outils*). C. Codron. A continuation of the author's well-known experiments, as described in the *Bulletin Société d'Encouragement*. The present article treats of reaming. Ill. Serial. 1st part. 2500 w. Rev de Mécanique—Nov. 30, 1906. No. 81128 E + F.

Power Values for Machine Tools in Groups. L. P. Alford. Giving the h. p. required for 150 machine tools, showing how these values were obtained. 2000 w. Am Mach—Vol. 30. No. 44. No. 87975.

Some Early Continental Machine Tools. Drawings and descriptions which illustrate the early history of the art of machine tool making on the Continent. 2200 w. Engr, Lond—Jan. 4, 1907. No. 81655 A.

The Census of Metalworking Machinery. Interesting information from a report by F. J. Miller, prepared for the U. S. Census Bureau, covering the production of metalworking machinery in 1904. 4500 w. Ir Age—Feb. 21, 1907. No. 82519.

Recent French Machine Tools (*Neuere Französische Arbeitsmaschinen*). Illustrates and describes lathes, shears, planers, etc. Serial. 3 parts. 3000 w. Zeitschr f Werkzeugmachsch u Werkzeuge—May 5, 15, and 25. No. 84967 each D.

Machine Tools at the Nuremberg Exposition (*Die Werkzeugmaschinen auf der Bayerischen Jubiläums-Landesausstellung, Nürnberg, 1906*). G. Schlesinger. Description of shop tools, belt and motor driven, shown at Nuremberg. Ills. 1400 w. Continuation of serial, Zeitschr d Ver Deutscher Ing—Feb. 2, 1907. No. 82918 D.

The German-Bohemian Exposition at Reichenberg in 1906 (*Die Deutsch-böhmische Ausstellung in Reichenberg 1906*). Prof. Theobald Demuth. Illustrated description of transmission machinery, gearing, machine tools and other exhibits. Serial. 1st part. 1500 w. Zeitschr d Ver Deutscher Ing—Nov. 17, 1906. No. 81141 D.

Machine Tools in a Concrete Machine Shop. L. P. Alford. Deals with the arrangement of departments and methods of setting machine tools in the buildings of the United Shoe Machinery Company. Ills. 3000 w. Am Mach—Vol. 30, No. 27. No. 85461.

Some Devices Used in Machine Tool Construction. Thomas R. Shaw. Presents details of interest, including an adaptation of the dropping worm box, with automatic knock-off motion, a novel

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quick-acting centre for supporting mandrel, a dividing arrangement, etc. Ills. 2000 w. Mech Engr—Nov. 3, 1906. No. 80347 A.

Modern Machinery and Its Future Development. H. L. Brackenbury. Read before the British Assn. An account of the forces which have affected the development. Remarks are limited to small machinery, covering the same ground as the engine lathe. 4000 w. Engng—Aug. 30, 1907. No. 86873 A.

Some Recent Developments in Machine Tools. Joseph Horner. Calls attention to some recent improvements in design, and illustrates and describes some of the later machines. 5000 w. Cassier's Mag—July, 1907. Serial. 1st part. No. 85714 B.

See also Boring Mills, Drills, Exhibitions, Feeds, Gear Cutting, Grinding Machines, Jigs, Lathes, Milling Machines, Planers, Punching, Screw Cutting, Speed Changing and Threading, under MACHINE WORKS AND FOUNDRIES.

### Machining.

Machining Time-recorder Frames. Edward Snyder. Illustrating and describing the profiling and milling fixtures used and details of setting, supporting and clamping the work. 1500 w. Am Mach—Vol. 30, No. 12. No. 83146.

Turning a 12-inch Gun Roller Path. Gompel Kuwada. Illustrates and describes the method adopted. 1000 w. Am Mach—Vol. 30, No. 31. No. 86058.

### Management.

See same title, under INDUSTRIAL ECONOMY.

### Milling.

See also Jigs, under MACHINE WORKS AND FOUNDRIES.

### Milling Cutters.

Tooth Relief for Milling Cutters—A Criticism. John Edgar. Discussing opinions of H. T. Millar, as expressed in an earlier article. Ills. 1600 w. Am Mach—Vol. 30, No. 21. No. 84489.

### Milling Machines.

Up-to-Date Milling Machinery. A. Bryant Symons. Information concerning recent practice. Ills. 1600 w. Prac Engr—Jan. 4, 1907. Serial. 1st part. No. 81630 A.

The Kennedy Universal Plate Mill. Illustrates and describes a universal mill, embodying a number of new devices, recently installed at Johnstown, Pa. 800 w. Ir Age—Jan. 3, 1907. No. 81361.

An Extra-Heavy Slab-Milling Machine. Illustrates and describes a milling

machine of great weight and power, and of somewhat novel design. 1000 w. Am Mach—Vol. 30. No. 2. No. 81553.

A New Milling Machine Dividing Head. Illustrated description of the Becker-Brainard universal index and spiral head. 1200 w. Ir Age—Sept. 5, 1907. No. 86745.

Milling Attachments for the Lathe. Oscar E. Perrigo. Illustrates and describes attachments by means of which many jobs usually performed on a milling machine may be done on the lathe. 1500 w. Am Mach—Vol. 30, No. 38. No. 87110.

A New Brown & Sharpe Machine Tool. Illustrated description of the No. 3 vertical spindle milling machine with constant speed drive. 1800 w. Ir Age—Oct. 31, 1907. No. 87997.

The Brown & Sharpe No. 4-B Milling Machine. Illustrated description of a tool designed especially for the heavier class of milling in machine, engine, and railroad shops. 1700 w. Ir Age—May 30, 1907. No. 84666.

A Handy Milling Machine. Illustrated detailed description of the Farwell Quick Change Milling Machine. 1200 w. Am Mach—Vol. 30, No. 31. No. 86056.

Milling Machine Output. P. V. Vernon. Considers the conditions to be observed if the best output is to be obtained from any reasonably well designed machine. Ills. 3000 w. Engr, Lond—May 31, 1907. No. 84896 A.

See also Feeds, under MACHINE WORKS AND FOUNDRIES.

### Modern Practice.

Notes on Modern Engineering Works. R. D. Summerfield. Discusses modern practice under the headings of buildings, equipment and management. 4500 w. Mech Engr—Aug. 17, 1907. No. 86585 A.

### Molding.

Loam Molding. E. L. Rhead. The present article considers the kinds of loam, and the materials and appliances required. 4000 w. Mech Engr—Dec. 22, 1906. Serial. 1st part. No. 81332 A.

Twelve Lessons on Raking Moldings. William Neubecker. The first of a series of twelve articles describing the method of developing the various raking moldings arising in practical work. Ills. 800 w. Met Work—Jan. 5, 1907. Serial. 1st part. No. 81395.

Molding a Toggle Press Body in Green Sand. R. H. Palmer. Illustrated detailed description of the making of a

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casting requiring 30,000 pounds of iron to pour it. 2500 w. *Am Mach*—Vol. 30, No. 5. No. 82018.

Molding Cast Steel Truck Bolsters. H. J. McCaslin. Drawings and description of method used. 2400 w. *Foundry*—Jan., 1907. No. 81392.

Molding a Double Flange Pulley by Machine. C. R. McGohey. Brief illustrated description of a difficult job successfully accomplished. 400 w. *Foundry*—April, 1907. No. 83592.

A Molding Job with a Green-sand Core. W. W. McCarthy. Illustrates and describes the molding of a newel post for the stairway of the Majestic Hotel, Atlanta, Ga. 1000 w. *Am Mach*—Vol. 30, No. 17. No. 83902.

A Dry-Sand Mold with a Very Thin Core. Illustrates and describes an interesting way of making a mold in dry sand, with its very thin core, the method of supporting it and the pouring of the casting. 1000 w. *Am Mach*—Vol. 30, No. 19. No. 84299.

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See also Foundries and Patterns, under MACHINE WORKS AND FOUNDRIES.

### Molding Machines.

The Molding Machine in Actual Practice. R. H. Palmer. Considers its adaptability to general work, the percentage of poor castings, and its improvement through co-operation of molders. 4000 w. *Am Mach*—Vol. 30, No. 14. No. 83440.

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The Bonvillain Molding Machine. Illustrates and describes some of the latest developments in French molding machines. 4800 w. *Ir Trd Rev*—Nov. 29, 1906. No. 80752.

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See also Foundries, under MACHINE WORKS AND FOUNDRIES.

## Molding Sand.

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## Patterns.

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Patternmaking and Molding of Air-Cooled Gas-Engine Cylinders. E. F. Lake. Illustrated description of methods for the different styles. 3000 w. *Am Mach*—Vol. 30, No. 1. No. 81482.

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## Patterns

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Manufacture of Drawn Gas Pipe (Zur Fabrikation gezogener Gasröhre). Anton Bousse. Description of machines and processes employed. Illus. Serial. 1st and 2d parts. 8000 w. Stahl und Eisen—Mar. 13 and Mar. 20, 1907. No. 83621 each D.

Inshaw's System of Manufacture of Solid Wrought-iron Tubing. W. H. Booth. Explains the process, and gives reasons why wrought iron is better than steel. 1200 w. Am Mach—Vol. 30, No. 22. No. 84682.

A New Lock-Bar Steel Pipe. Max Kronauer. States the objections to riveted pipe, and illustrates and describes a pipe in which the adjoining edges are inserted into grooves and clamped by compression. 1200 w. Eng News—June 13, 1907. No. 85027.

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### Planers.

Shifting-Belt Planer Drive. E. H. Waring. Comments on an article by W. H. Henley, with suggestions. 1600 w. Am Mach—Vol. 29, No. 45. No. 80280.

A High-Speed Planer. C. Moody. Illustrated detailed description of a planing-machine 30 in. by 30 in. by 8 ft. 3000 w. Mech Engr—Feb. 16, 1907. No. 82597 A.

A Large Pit Planer. Illustrations, with brief description of a pit planer built for finishing the four edges of armor plate, 24 ft. long by 12 ft. wide by 12 ins. thick at one setting. 700 w. Am Mach—Vol. 30, No. 15. No. 83561.

A Regenerative Reverse Planing Machine. Illustrated description of a new planer designed on the principle of balancing the forces by recoil springs. 800 w. Engr, Lond—June 7, 1907. No. 85119 A.

### Pneumatic Tools.

The Development of Compressed Air Tools (Die Entwicklung des Pressluftwerkzeugbaues). Alexander Lang. Illustrates and describes various types of compressed air hammers, drills, riveters, etc., built by the Porkorny and Wittekind Company of Frankfort. Serial. 1st part. 2500 w. Schiffbau—May 22, 1907. No. 84943 D.

Portable Pneumatic Tools. Herbert Bing. Illustrates and describes the improvements effected in the early tools and the most important new tools. 11000 w. Inst of Mech Engrs—July, 1907. No. 86353 N.

Some Late Improvements on Compressive Riveters and Other Tools. Chester B. Albree. An illustrated talk on new features recently introduced. Discussion. 4500 w. Pro Engrs' Soc of W Penn—May, 1907. No. 84625 D.

The Economic Importance of Compressed-Air Tools (Die Wirtschaftliche Bedeutung der Pressluftwerkzeuge). Alexander Lang. An elaborate analysis of operating costs showing under what circumstances they are economical. 3000 w. Zeitschr d Ver Deutscher Ing—July 20, 1907. No. 86277 D.

Pneumatic Tools for Boiler Shops. Charles Dougherty. Illustrated descriptions with discussion on the design, operation and care. 1500 w. Boiler Maker

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### Power

—Nov., 1907. Serial. 1st part. No. 88000.

See also Hammers, under MACHINE WORKS AND FOUNDRIES.

### Power.

The Choice of Motive Power for the Workshop. R. E. Mathot. A careful, impartial illustrated study of various types of steam, gas, and oil engines for comparatively small plants under a wide range of conditions. Concrete examples are freely used by way of illustration. 3500 w. Engineering Magazine—Jan., 1907. No. 81198 B.

The Choice of Motive Power for the Workshop. R. E. Mathot. This second article gives a study of the comparative running costs of steam, gas, and oil engines under operative conditions. 3500 w. Engineering Magazine—Feb., 1907. No. 81896 B.

The Choice of Motive Power for the Workshop. Rodolphe Mathot. This third and concluding article of a series gives a comparison of burden costs and a study of working examples. 5400 w. Engineering Magazine—March, 1907. No. 82638 B.

See also Machine Tools, under MACHINE WORKS AND FOUNDRIES; and Electric Driving and Power Plants, under POWER AND TRANSMISSION.

### Press Tools.

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### Production Records.

A Graphical Wall Record for the Production Department. H. L. Whittemore.

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### Riddle.

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### Riveters

### MACHINE WORKS AND FOUNDRIES

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loose ring power driven foundry riddle, giving results of working tests. 800 w. Ir Age—June 13, 1907. No. 85003.

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Improvements on Compressive Riveters. Chester B. Albree. Illustrating and describing the advances that have been made in riveters for concrete mixers and a new type of boiler riveter. 2200 w. Am Mach—Vol. 30, No. 28. No. 85568.

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in general, telephones, electric light apparatus, electric cables and other specialties are made. 2700 w. Engr, Lond—Dec. 28, 1906. No. 81542 A.

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The Laying Out of New Works. Considers the general principles to be observed in laying out up-to-date works. The site, buildings, power, lighting, heating and ventilation, driving and arrangement of machinery, handling of material, etc., are discussed. Ills. 4000 w. Engr, Lond—Jan. 18, 1907. Serial. 1st part. No. 81990 A.

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The Wheeling Mold and Foundry Co. An illustrated description of a well-equipped plant for the manufacture of heavy machinery. 2500 w. Ir Trd Rev—May 30, 1907. No. 84675.

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## Shops

## MACHINE WORKS AND FOUNDRIES

## Spacing Table

plant for the manufacture of portable railways and industrial cars, and its equipment. 2500 w. *Ir Age*—Oct. 10, 1907. No. 87534.

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The New Locomotive Erecting Shop at Darlington Works. North-Eastern Ry. Charles S. Lake. Illustrated detailed description. 1400 w. *Eng Rec*—March 23, 1907. No. 83221.

The Canada Tool Works. H. R. Cobleigh. An illustrated detailed description of the enlarged plant of the John Bertram & Sons Company at Dundas, Ontario. 3800 w. *Ir Age*—Sept. 12, 1907. No. 86879.

The Works of the Union Twist Drill Company. Illustrated description of a plant equipped for the manufacture of gear cutters, milling cutters, etc., with facilities for machining, hardening and testing. 4000 w. *Am Mach*—Vol. 30, No. 10. No. 82791.

The Armstrong Pozzuoli Works. Illustrates and describes these important works, near Naples, Italy, for the manufacture of war material of all kinds. Plate. 1200 w. *Engr, Lond*—March 15, 1907. No. 83271 A.

New Shops of the Cincinnati Machine Tool Company. Brief description, with illustrations, of a shop of modern construction. 700 w. *Am Mach*—Vol. 29, No. 48. No. 80760.

A Few Specialties of the Collinwood Shops. Illustrates and describes special tools used in these shops of the L. S. & M. S. Ry. to reduce cost and increase the output. 2000 w. *Ry Mas Mech*—Dec., 1906. No. 80952.

The Oerlikon Works. A brief illustrated description of one of the most important factories in Switzerland. 1000 w. *Engr, Lond*—Aug. 23, 1907. No. 86741 A.

Some Manufactories of Electrical and Other Machinery in Central Europe (Quelques Ateliers de Constructions Electriques et Mécaniques de l'Europe Centrale). Alfred Lambotte. Describes a large number of the more important works in France, Germany, Italy, Switzerland, etc., with notes on the electrical machines, pumps, turbines, engines, etc., produced. Ills. 3500 w. *Soc Belge d'Electriciens*—July, 1907. No. 86200 E.

See also Automobile Works, Boiler Works, Buildings, Engine, Works, File

Works, Foundries, Guns and Locomotive Works, under MACHINE WORKS AND FOUNDRIES; America, under INDUSTRIAL ECONOMY; and Shops, under RAILWAY ENGINEERING, MOTIVE POWER AND EQUIPMENT.

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A Universal Shrink Rule. F. W. Barrows. Describes this new shrink rule, explaining its use. Ills. 2000 w. *Am Mach*—Vol. 30. No. 1. No. 81484.

Shrinkage from a Founder's Point of View. W. Roxburgh. Read at British Found. Assn. Considers shrinkage in metal castings, the warping or twisting due to unequal cooling, and related matters. Ills. 2500 w. *Foundry*—Feb., 1907. No. 82270.

## Signals.

Factory Intercommunication Systems. John Drummond. An explanation of the electric light signals as used by the Cleveland Twist Drill Company. 2500 w. *Ir Age*—March 7, 1907. No. 82790.

## Sizing.

Sizing Holes without Reamers. Frank E. Shailor. Explains how it is done. Ills. 500 w. *Am Mach*—Vol. 30, No. 22. No. 84681.

## Soldering.

Some Cautions to Be Observed in Soldering. Arthur B. Weeks. Gives examples of troubles caused by too generous use of acid for soldering on electrical machinery. 700 w. *Elec Ry Rev*—Dec., 1906. No. 81047.

Soldering and Soldering Processes. The form of solders and the process of soldering are discussed. 2200 w. *Sci Am Sup*—July 6, 1907. No. 85415.

Experiments on Soldering. Adolf Lippmann. From *Elek. Zeit*. Investigations on the degree of acidity of fluxes and the resulting effect on metals, and the testing of soldering materials. 3300 w. *Elec Rev, Lond*—Sept. 20, 1907. Serial. 1st part. No. 87336 A.

The Autogenous Soldering of Metals. M. U. Schoop. An illustrated article on the processes for carrying out autogenous soldering, and its wide utilization. 2500 w. *Sci Am*—March 2, 1907. No. 82642.

See also Welding, under MACHINE WORKS AND FOUNDRIES; and Solders, under MATERIALS OF CONSTRUCTION.

## Spacing Table.

The Spacing Table in Steel Fabricating Plants. George P. Thomas. Gives a comparison of cost of punching holes by various methods, and gives an illustrated

# MECHANICAL ENGINEERING

## Speed Changing

## MACHINE WORKS AND FOUNDRIES

## Tempering

description of a spacing table, explaining its advantages. 2300 w. *Ir Trd Rev*—Dec. 6, 1906. No. 80866.

## Speed Changing.

The Newman Variable Speed Gear. Emile Guarini. Illustrates and describes a new gear brought out in England, intended for application to motor cars, machine tools, textile machinery, electric motors, etc. From a shaft driven at a constant speed a complete range of speeds can be obtained. 1000 w. *Sci Am Sup*—Dec. 8, 1906. No. 80882.

A Variable-Speed and Feed Mechanism. T. M. Lowthian. Illustrated detailed description of a new device for obtaining a multiplicity of changes for either speed or feed gears. 700 w. *Am Mach*—Vol. 30. No. 42. No. 87735.

Speed-Changing Devices on Machine Tools (Die Umlaufzahlenreihen bei Werkzeugmaschinen). Franz Adler. Illustrated description of various types with a discussion of their design. 8000 w. *Serial*. 1st part. *Zeitschr d Ver Deutscher Ing*—Sept. 21, 1907. No. 87651 D.

A Four Speed Change-Gear Device. B. F. Landis. Illustrates and describes an arrangement, limited to four speeds, which has proved to be efficient. 1200 w. *Am Mach*—Vol. 30, No. 39. No. 87241.

Speeds and Feeds in Geometric Progression. John Parker. Explains how speeds and feeds for machine tools are calculated in geometric progression by logarithms and shows typical examples. 2000 w. *Am Mach*—Vol. 30, No. 39. No. 87237.

## Springa.

A Review of Formulas for Helical Springs. O. A. Thelin. Gives a new solution of certain problems. 500 w. *Am Mach*—Vol. 29. No. 52. No. 81269.

Dr. Proell's Graphical Table for the Calculation of Helical Springs (Abaque pour le Calcul des Dimensions des Ressorts Hélicoidaux Cylindriques Etabli par Dr. R. Proell). Fritz Krull. Mathematical discussion of the determination of curves and tables. Diagram. 1200 w. *Rev de Mécanique*—Oct. 31, 1906. No. 80637 E + F.

The Strength of Coil Springs. H. E. Wimperis. An endeavor to determine the fundamental conditions and more important formulæ which govern the design of coiled springs. 2800 w. *Engr*, Lond—Nov. 30, 1906. No. 80927 A.

Precision Dynamometer Springs. A. H. Emery, Jr. Illustrates and describes methods of doing a remarkable piece of

work. 2400 w. *Am Mach*—Vol. 29. No. 48. No. 80763.

Instrument Control Springs. Charles C. Garrard. Discusses the design of such springs, the theory of flat spiral springs being considered in the present article. 1600 w. *Elec Engr*, Lond—May 31, 1907. *Serial*. 1st part. No. 84879 A.

## Taps.

Tapper Taps. Erik Oberg. Describes the tapper tap and its use, its design and making. 1100 w. *Mach*, N Y—Dec. 1906. No. 80784 C.

Cutting Taper Threaded Taps with Chasers. Erik Oberg. Considers the conditions of cutting a taper thread with a chaser, particularly the case of a pipe tap with a total taper of  $\frac{3}{4}$  in. per foot, cut with a chaser supposed to be held in a threading tool-holder. Diagrams. 900 w. *Mach*, N Y—May, 1907. No. 84022 C.

Remarks on the Making of Hand Taps. Erik Oberg. Information and data intended to supplement a number of previous articles. 1700 w. *Mach*, N Y—June, 1907. *Serial*. 1st part. No. 84092 C.

## Tempering.

The Hardening of Steel in an Electrically Heated Bath. Brief illustrated description of an electrically heated furnace for hardening and annealing steel, giving some of the results. 1000 w. *Ir Age*—Jan. 3, 1907. No. 81363.

Use of the Lead Pot in Hardening—Cyanide Solution. E. R. Markham. Suggestions of value in heating steel for hardening, and the treatment to secure good results. 1000 w. *Am Mach*—Vol. 30, No. 9. No. 82666.

Tempering Steel with Cyanide—Some Results Obtained by Its Use, and Some Instances Where It Should Not Be Employed. E. R. Markham. 1200 w. *Am Mach*—Vol. 30. No. 2. No. 81554.

The Exposition of Tempering Processes (Exposition des Procédés de Trempe). M. Ch. Rosambert. Descriptions of the furnaces, pyrometers and processes shown at this exposition at Vienna, May-July, 1906, with brief reviews of the technical papers read at the conferences of metallurgists held in connection. Ill. 12500 w. *Rev d Metal*—April, 1907. No. 84100 E + F.

Furnaces for Tempering High-Speed Steel. C. U. Scott. Suggestions for the fitting up of a hardening room, and the treatment of the tools. 1500 w. *Am Mach*—Vol. 30, No. 19. No. 84301.

Tempering Ovens (Ueber Härteöfen). Otto Goldschmidt. Illustrated description of various types, heated by coal, coke, gas,

# MECHANICAL ENGINEERING

## Threading

or electricity. 2500 w. Stahl u Eisen—May 29, 1907. No. 84941 D.

## Threading.

Repairing Defective Threads. D. S. Cole. Describes briefly a method of repairing by adding the necessary new stock in the form of a wire soldered in a groove. 800 w. Am Mach—Vol. 30, No. 39. No. 87238.

Measuring Width of Flat on U. S. Standard Thread Tools. Erik Oberg. Explains a method of measuring by a simply designed micrometer, giving tables and diagrams. 1000 w. Mach, N Y—April, 1907. No. 83392 C.

Thread-Cutting Tools—Methods of Making and Using. R. A. Almond. Illustrates and describes holders and fixtures for single-pointed thread tools and chasers, grinding and shaping devices, etc. 3200 w. Am Mach—Vol. 30. No. 1. No. 81483.

Thread Tools for Threads with Round-Ed Top and Bottom. E. A. Johnson. Describes the tools and methods used in making the Whitworth thread tools. Diagrams. 1200 w. Mach, N Y—May, 1907. No. 84020 C.

A Compensating Thread-cutting Device. Ethan Viall. Illustrated description of the device and its use. 700 w. Am Mach—Vol. 30, No. 39. No. 87240.

The Philadelphia Thread Milling Attachments. Illustrated description of a device which renders engine lathes capable of performing thread milling with facility. 1000 w. Ir Age—Aug. 8, 1907. No. 86115.

Pipe Cutting and Threading Machine. Illustrates and describes a new machine for this work. 1000 w. Ir Trd Rev—Nov. 1, 1906. No. 80164.

## "Tiffany Green."

"Tiffany-Green" and Its Method of Production. G. Erlenmeyer. Describes the method of obtaining this rich finish for castings. Ills. 1500 w. Brass Wld—Dec., 1906. No. 81271.

## Toggle-Joints.

The Ratio of Effective Pressure with Toggle-Joints. W. H. Butz. Deals with maximum results obtained with machines embodying the toggle-joint when the joint is straightened out. 900 w. Mach, N Y—June, 1907. No. 84688 C.

## Tool Rooms.

Tool Room Care and Economy. F. G. De Saussure. An explanation of a system, illustrating its application. Ills. 2000 w. Eng & Min Jour—June 15, 1907. No. 85049.

## MACHINE WORKS AND FOUNDRIES.

## Ventilation

A Method of Indexing and Numbering Tools. Linwood A. Murray. An account of a card system used by the writer which gave satisfaction. 1500 w. Am Mach—Vol. 29. No. 51. No. 81073.

## Tools.

The Making of High-Speed Steel Tools. O. M. Becker. Describes how these tools should be heated for forging and tempering and the apparatus advisable to use. Ills. 4500 w. Am Mach—Vol. 30, No. 12. No. 83144.

High-Speed Steel Tools. E. R. Norris. Discusses the making, life, and shape of the tool, its applications, etc., referring to other papers on this subject. 4500 w. Elec Jour—May, 1907. No. 84475.

The Hartness Turret Chasing Tool. Illustrates and describes an automatic turret screw chasing tool for use on the flat turret lathe. 1200 w. Ir Age—Jan. 31, 1907. No. 82014.

Helpful Hints for the Toolmaker. F. E. Shailor. Hints on cutting a smooth thread, hardening, cutting cams accurately, dies, etc. Ills. 1500 w. Mach, N Y—March, 1907. No. 82768 C.

Special Tools for Musical Instrument Work. S. J. Putnam. Illustrates and describes special tools and their making and use. 2000 w. Mach, N Y—March, 1907. No. 82767 C.

Standardization of Special Tools. M. E. Ellis. Illustrates and describes a few standard types of drilling jigs and standard small parts for jigs and fixtures, as screws, bushings, and straps. 1500 w. Am Mach—Vol. 30, No. 23. No. 84794.

Some New and Useful Electric Hand Tools. A. Frederick Collins. Various portable hand tools, driven by electricity, are illustrated and described. 1500 w. Sci Am—Feb. 23, 1907. No. 82576.

A Useful Combination Tool. A. Frederick Collins. Illustrates and describes a tool combining on a single base, a pipe vise, an anvil, a forge, bench vise, drill press and emery wheel. 800 w. Sci Am—March 2, 1907. No. 82641.

See also Cutting Metals, Gear Cutting, Grinding and Milling Cutters, under MACHINE WORKS AND FOUNDRIES.

## Vaults.

The Largest Armor Plate Vault. Illustrated description of methods of manufacture at the works of the Bethlehem Steel Co. 1200 w. Ir Age—Oct. 31, 1907. No. 87996.

## Ventilation.

The Ventilation of Workshops. The second report of a Departmental Commit-



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## Ventilation

tee to the Home Secretary in regard to investigations made as to the ventilation of English factories, dealing especially with the application of fans for the removal of dust, fumes, steam and other impurities. Also the question of respirators. 3500 w. *Mech Engr*—Aug. 17, 1907. Serial. 1st part. No. 86587 A.

Dust Removal in a Brass Foundry. Walter B. Snow. Read at Philadelphia meeting of the Am. Brass Found. Assn. Illustrates and describes mechanical means of removing harmful dust. 2000 w. *Heat & Vent Mag*—Oct., 1907. No. 87749.

See Shops and Ventilation, under HEATING AND COOLING.

## "Verde-Antique."

The Rapid Production of the "Verde-Antique" Finish; and the Method of Obtaining the Various Shades. Information and directions for producing this finish. 3000 w. *Brass Wld*—July, 1907. No. 85826.

## Vibrations.

Mill Vibrations. Eugene B. Whipple. Describes the nature and cause of some of these vibrations, and presents methods that have been employed in stopping them. 1500 w. *Jour Worcester Poly Inst*—March, 1907. Serial. 1st part. No. 83278 C.

## Welding.

Methods and Costs of Electrically Welding 3,087 Girder Rail Joints at Camden, N. J. P. Ney Wilson. A report of the organization and cost of this work. 3000 w. *Engng-Con*—March 20, 1907. No. 83126.

Welding and Soldering. Electric Welding Machines for Workshops (*Schweissen und Löten. Elektrische Schweissmaschinen für Massenfabrication*). Herr Peter. Description of electric welding apparatus and methods of operation. Illus. Serial. First and second instalments. 6000 w. *Glaser's Annalen*—Feb. 1 and Feb. 15, 1907. No. 83618 each D.

An Improved Electric Welder. A. Frederick Collins. An illustrated description of the Prescott welder, especially designed for welding wire and rods of small cross section. 1200 w. *Sci Am*—Aug. 3, 1907. No. 86065.

Autogenous Welding of Metals. Ernest Schneider. Abstract translation of a paper read in Chemnitz, Germany. Describes applications of the oxy-hydrogen and oxy-acetylene flames. 3000 w. *Sci Am Sup*—July 20, 1907. No. 85743.

## MACHINE WORKS AND FOUNDRIES.

## Westinghouse

Welding by Means of the Oxy-Acetylene Flame (*Ueber das Schweissen mit der Sauerstoff-Azetylenflamme*). Dr. L. Michaelis. Discussion of oxygen-acetylene blowpipe welding, and comparison with oxy-hydrogen welding, based on an address of M. Edouard Fouché, with illustrations. Serial. 2 parts. 3000 w. *Schiffbau*—Nov. 28, Dec. 12, 1906. No. 81118 each D.

Autogenous Welding With the Oxy-Acetylene High-Pressure Blowpipe. Illustrates and describes this system, which has recently been perfected by a London company. 1000 w. *Sci Am*—March 23, 1907. No. 83153.

"Autogenous" Welding with the Oxy-Acetylene Blowpipe. Outlines some of the interesting features of a plant in Worcester, Mass., where this process has been installed. Ills. 1500 w. *Eng News*—June 27, 1907. No. 85300.

Autogenous Welding. F. C. Cutler. Illustrated description of the oxy-acetylene blow-pipe and its application. 1800 w. *Cassier's Mag*—Sept., 1907. No. 86618 B.

Oxy-Acetylene Blowpipe Welding. W. H. Booth. Explains the use of this method in making reinforced tubes for automobile work, its possibility for boilers and reasons for its intense heat. Ills. 2000 w. *Am Mach*—Vol. 30, No. 28. No. 85566.

The Oxy-Acetylene Blowpipe. Cecil Lightfoot. From a paper presented to the Int. Acetylene Assn. Deals with the types of blowpipe in use and their practical application. 1600 w. *Ir Age*—Sept. 19, 1907. No. 87102.

Burning a New Jaw on a Heavy Shear. Brief illustrated description of the use of thermit for heating the fractured surface to the fusing point before pouring the cast iron. 500 w. *Am Mach*—Vol. 30, No. 16. No. 83778.

The Welding of Large Pieces, Especially in the Repairing of Ships, by Means of Thermit (*Grosse Schweissungen Mittels Erwärmungsmasse Marke "Thermit," besonders bei Reparaturen im Schiffbau*). Illustrated description of welding of broken stern posts, rudder frames, etc., by the aluminothermic process. Serial. 2 parts. 3500 w. *Schiffbau*—Oct. 10 and 24, 1906. No. 81117 each D.

## Westinghouse.

A brief History of the Westinghouse Machine Company. Edward H. Sniffin. Review of the period covering the manufacture of steam engines, gas engines, steam turbines, and stokers. 4500 w. *Elec Jour*—May, 1907. No. 84476.

# MECHANICAL ENGINEERING

## Wire Drawing

## MATERIALS OF CONSTRUCTION

## Alloys

### Wire Drawing.

The Manufacture of Brass Wire. E. J. Bolton. Brief discussion of the important operations in the manufacture. 2500 w. *Ir & Coal Trds Rev*—Oct. 26, 1906. No. 80315 A.

The Drawing of Copper Wire (Das Ziehen von Kupferdraht). Wilhelm Küppers. Well illustrated description of machinery and processes at various German works for the manufacture of wire and cables, chiefly for electrical purposes. Serial. 2 parts. 5000 w. *Zeitschr d Ver Deutscher Ing*—Nov. 24 and Dec. 15, 1906. No. 81144 each D.

Wire Drawing: The Second Step in a Useful Art. W. W. Gibbs. An account of the invention of the multiple die system. Ills. 5500 w. *Ir Age*—Jan. 3, 1907. No. 81364.

History of Wire Drawing (Geschichtliches von der Drahtzieherei). B. Neumann. 1600 w. *Stahl und Eisen*—Feb. 20, 1907. No. 82954 D.

The Telephone Wire Plant. Sergius P. Grace. Explains some of the factors in the design of the wire plant, and discusses some of the problems. Ills. 4000 w. *Pro Am Inst of Elec Engrs*—April, 1907. No. 84518 D.

The Heating of Charges for Wire Drawing (Die Erwärmung eines Drahtformigen Schmelzeinsatzes). Fritz Emde.

A theoretical and mathematical discussion of the subject. Ills. 6000 w. Serial. 2 parts. June 16 and 23, 1907. No. 85661 each D.

Modern Practice in Wire-Drawing Machines. An illustrated review of the trend in the design of machines used for all classes of wire making. 2000 w. *Engng*—Aug. 9, 1907. Serial. 1st part. No. 86466 A.

Rubber Covered Wire.—Its Manufacture and Tests in Regard to Its Life and Insulation Properties. Hugh T. Wrecks. Gives an outline of the manufacture of low-voltage rubber covered wire, showing the possibilities of adulteration, and the difficulty of detection. Ills. Discussion. 7500 w. No. 68. *Pro Brooklyn Engrs' Club*—1906. No. 85974 N.

### Woodworking.

The Fox Universal Trimmer. Illustrated description of an improved wood trimmer. 1000 w. *Ir Age*—Nov. 29, 1906. No. 80764.

Making Wooden Rolls for Textile Machinery. G. A. Dexter. Brief illustrated description of methods used by the writer. 700 w. *Am Mach*—Vol. 30, No. 32. No. 86300.

Special Band-Saw for Ripping Deck-Planks. Illustrates and describes a new machine for re-sawing wide planks into deck planks of various widths. 1100 w. *Engng*—Nov. 9, 1906. No. 80494 A.

# MATERIALS OF CONSTRUCTION

## Abrasives.

Alundum, the New Abrasive. An account of a valuable material for grinding-wheels, nearly as hard as diamond, made by the power of Niagara Falls. 1500 w. *Am Mach*—Vol. 29. No. 45. No. 80281.

Modern Abrasive Materials and Their Use in Shop Practice. J. Royden Peirce. Discusses kinds of abrasives, and their behavior, the principles of abrasive wheels, their form, use, etc. 3300 w. *Eng News*—June 6, 1907. No. 84819.

## Alloys.

The Thermic Method of Analysis of Professor Tammann and the Researches on the Constitution of Alloys at the University of Göttingen (La Méthode d'Analyse Thermique du Professeur Tammann et les Recherches sur la Constitution des Alliages de l'Université de Goettingen). A. Portevin. Ills. 6000 w. *Rev d Métal*—Aug., 1907. No. 86916 E + F.

Bearing Alloys. Alfred Suggate. Read to the Manchester Students, Inst. of Civ. Engrs. Describes some of the conditions necessary to make a selected alloy a success. Deals principally with white metal. 2800 w. *Engr, Lond*—Oct. 26, 1906. Serial. 1st part. No. 80311 A.

Bearing Metal for Automobile Use. Thomas J. Fay. Extract from a book on Materials for Automobile Construction. 4500 w. *Automobile*—Sept. 19, 1907. No. 87118.

Eighth Report to the Alloys Research Committee: On the Properties of Alloys of Aluminium and Copper. Prof. H. C. H. Carpenter and C. A. Edwards. A full report of research carried out by the authors, explaining the scheme, the materials used, and methods. Ills. 38000 w. *Inst of Mech Engrs*—Jan. 18, 1907. No. 82049 N.

Note on Alloys of Aluminum (Contribution à l'Etude des Alliages de l'Alumi-

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## Alloys

## MATERIALS OF CONSTRUCTION

## Alloy Steels

nium). Hector Pécheux. Results of investigations on the physical, electrical and chemical properties of aluminium and the more fusible metals, lead, tin, zinc, bismuth, etc. 4700 w. *Rev Gen des Sci*—Feb. 15, 1907. No. 82994 D.

Disintegration of Aluminum Alloys. Erwin S. Sperry. Gives illustrated examples of disintegration of half and half alloys. 500 w. *Brass Wld*—March, 1907. No. 83285.

Light Aluminum Alloys. J. E. Stacey Jones. Abstract of a paper read before the Coventry Engng. Soc. Describes these alloys, their founding and treatment, and methods of testing. 2500 w. *Ir & Coal Trds Rev*—April 12, 1907. No. 83889 A.

Alloys of Manganese and Copper (Alliages De Manganèse De Cuivre). S. Wologdine. Review of some of these alloys, fusing points, micro-photographs, etc. Ills. 4600 w. *Revue de Métallurgie*—Jan., 1907. No. 82909 E + F.

See also Magnetic Alloys and Muntz Metal, under MATERIALS OF CONSTRUCTION.

## Alloy Steels.

A Crucial Test of Modern Alloy Steel. Thomas J. Fay. An account of the condition of material, after a serious automobile accident while the car was traveling a mile a minute. Ills. 1800 w. *Automobile*—Feb. 28, 1907. No. 82668.

The Forging of Alloy Steels. E. F. Lake. Showing the effect of temperature, methods of forging, welding and annealing on the production of high-grade forgings. 3000 w. *Am Mach*—Vol. 30, No. 35. No. 86623.

Special Steels for Motor-Car Construction. Briefly considers nickel, chrome, silicon, tungsten, vanadium, and chrome-nickel steels. 3000 w. *Ir & Coal Trds Rev*—Oct. 26, 1906. No. 80314 A.

Steels Used on Automobile Construction. E. F. Lake. Gives analyses and physical characteristics of carbon chrome nickel steels and other high-class materials used in making frames, gears, etc. Ills. 5500 w. *Am Mach*—Vol. 30, No. 11. No. 83013.

Special Auto Steel. Thomas J. Fay. Gives 4 tables of data of the various grades of steel, stating the results of reliable tests, and giving a detailed discussion of the relative value of the several products. Ills. 7000 w. *Pro Am Soc of Mech Engrs*—June, 1907. No. 84647 F.

The Influence of Nickel and Carbon on Iron. G. B. Waterhouse. A research considering a series of steels of constant nickel with varying carbon percentages.

1200 w. *Elec-Chem & Met Ind*—Nov., 1906. Serial. 1st part. No. 80426 C.

Nickel Steel. E. F. Lake. Gives much information in regard to the effect of nickel, the treatment, and applications. 2500 w. *Mach, N Y*—Sept., 1907. No. 86753 C.

Nickel-Chrome Steel. E. F. Lake. Explains the effect of chromium, of silicon, of manganese, of phosphorus and sulphur, the heat treatment, machinery, etc. 2500 w. *Mach, N Y*—July, 1907. No. 85485 C.

Nickel-Silicon Steels (Aciers Nickel-Silicium). M. L. Guillet. Study of the properties of steel with different proportions of nickel and silicon. Ills. 6500 w. *Bull de la Soc D'Encouragement Pour L'Ind Nat*—Original Memoirs—Dec., 1906. No. 82911 E + F.

Boron Steels (Les Aciers au Bore). L. Guillet. Describes the influence of boron on the metallographic and physical properties of normal, tempered, annealed and case-hardened steels. Ills. 5000 w. *Rev d Métal*—Aug., 1907. No. 86915 E + F.

Boron Steels. Dr. Leon Guillet. Reports micrographic investigations and mechanical tests of normal and quenched case-hardened and annealed steels, giving theoretical and commercial conclusions. Plates. 3000 w. *Jour Ir & St Inst*—No. II, 1907. No. 87361 N.

Tungsten and Its Use as a Hardener of Steel. J. Forrest Lewis. Gives figures regarding the increasing production of ores of this metal and its use in the manufacture of "high-speed" steel. 2000 w. *Ores & Metals*—Sept. 5, 1907. No. 86814.

Chrome Tungsten Steel (Aciers Chrome-Tungstène). M. L. Guillet. A study of steels by their microstructure. Ills. 6000 w. *Revue De Métallurgie*—Jan., 1907. No. 82908 E + F.

Carbon Tungsten Steels. Thomas Swinden. An investigation of varying percentages of carbon in the presence of a constant percentage of tungsten. 5500 w. *Ir & Coal Trds Rev*—May 10, 1907. No. 84619 A.

Copper Steels. Pierre Breuil. A study of the alloys of iron and copper, the preparation of the ingots, their chemical composition, segregation, treatment; mechanical tests including tensile tests, shock tests on notched and unnotched bars, hardness and torsional tests, with investigation of steels containing 1 per cent of carbon. Ills. 17000 w. *Jour Ir & St Inst*—No. II, 1907. No. 87357 N.

Manganese Steel and Some of Its Uses. E. F. Lake. Calls attention to some of

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### Alloy Steels

the peculiarities of this material, and its advantages over carbon steel for rails subject to severe wear, for burglar-proof vaults, etc. 2000 w. *Am Mach*—Vol. 30, No. 20. No. 84378.

Properties and Uses of Vanadium Steel. Extracts from a lecture by J. Kent Smith before the Assn. of Automobile Mfrs., New York. 3500 w. *Ir Trd Rev*—July 11, 1907. No. 85527.

Recent Researches on Ternary and Quarternary Vanadium Steels (*Nouvelles Recherches sur les Aciers au Vanadium Ternaires et Quarternaires*). L. Guillet. Describes the results of tests to determine the effects of different quantities of vanadium on the properties of the alloys. 4000 w. *Rev d Métal*—Aug., 1907. No. 86914 E + F.

Vanadium Steel. Trans. from *Revue Industrielle*. Information concerning vanadium and the characteristics of vanadium steel. 1800 w. *R R Gaz*—Sept. 20, 1907. No. 87912.

Some Properties of Vanadium Steel. E. F. Lake. How small quantities of vanadium affect iron and steel and where it is most useful. 2500 w. *Am Mach*—Vol. 30, No. 18. No. 84039.

Vanadium Steel. E. F. Lake. Information in regard to the characteristics of a new steel for machine construction. Ills. 1800 w. *Mach, N Y*—Oct., 1907. No. 87467 C.

Vanadium Steel. J. Kent Smith. Describes this metal giving its history and its beneficial effects on steel. General discussion. 8800 w. *Pro Engrs' Soc of W Penn*—Oct., 1907. No. 87861 D.

Heat Treatment of Alloyed Steels. E. F. Lake. Discusses methods of annealing, temperatures which are safe, ways of heating and quenching, and the effect of various alloy materials on steel. 4500 w. *Am Mach*—Vol. 30, No. 31. No. 86053.

See also Automobiles, Locomotives and Tool Steels, under MATERIALS OF CONSTRUCTION; Bearings, under AUTOMOBILES; and Case Hardening, under MACHINE WORKS AND FOUNDRIES.

### Aluminium.

Progress in the Use of Aluminium in 1906. Joseph W. Richards. Shows how improved methods of working this metal have extended its use as a light durable material and as a dioxidizing agent. 3000 w. *Eng & Min Jour*—June 15, 1907. No. 85053.

Cast Aluminum for Automobile Work. Thomas J. Fay. A discussion of this material, reporting tests, and giving informa-

### MATERIALS OF CONSTRUCTION

### Cast Iron

tion of interest. 2000 w. *Automobile*—Aug. 15, 1907. No. 86439.

See also Alloys, under MATERIALS OF CONSTRUCTION; and Castings, under MACHINE WORKS AND FOUNDRIES.

### Automobiles.

Material for Automobiles. Elwood Haynes. An examination of the various metals used, and the parts for which certain materials are adapted. 3500 w. *Pro Am Soc of Mech Engrs*—June, 1907. No. 84639 F.

See also Alloy Steels, Bronze and Cast Iron, under MATERIALS OF CONSTRUCTION.

### Brass

The Effect of Antimony on High-Brass Rods. Erwin S. Sperry. Shows that over .02 per cent. of antimony in high brass will cause it to crack in rolling, and demonstrates that there is still a lack of uniformity in cathode copper. 900 w. *Brass Wld*—Sept., 1907. No. 87186.

Tests of Some Brass and Bronze Bars. Harry B. de Pont. Gives results of a series of experiments to ascertain their chemical and physical properties. 1700 w. *Foundry*—Sept., 1907. No. 86817.

### Bronze.

Structural Bronze for Automobile Parts. Thomas J. Fay. Extracts from "Materials for Automobile Construction." Gives tests of this material showing its strength, with information concerning its production. 3000 w. *Automobile*—Sept. 5, 1907. No. 86823.

See also Castings, under MACHINE WORKS AND FOUNDRIES.

### Cast Iron.

The Influence of Carbon on Cast Iron. Abstract of a report of research work by W. H. Hatfield, on "The Influence of the Condition of the Several Varieties of Carbon Upon the Strength of Cast Iron, as Cast and Heat Treated." 2500 w. *Ir Age*—Dec. 27, 1906. No. 81259.

Experiments with Cylinder Irons. Reports experiments made by F. J. Cook with mottled irons for casting cylinders, also with hematites and phosphoric irons for ordinary castings. 1600 w. *Ir & Coal Trds Rev*—Aug. 9, 1907. No. 86478 A.

Gray Cast Iron in Auto Construction. Thomas J. Fay. Discusses the uses for which it is suitable, explaining some of its characteristics. 3800 w. *Automobile*—Aug. 1, 1907. No. 86037.

Tensile Testing of Cast Iron. F. J. Cook. Abstract of a paper read before the Birmingham Assn. of Mech. Engrs. Considers characteristics of cast iron in

# MECHANICAL ENGINEERING

## Cast Iron

regard to tensile strength. 5500 w. Mech Engr—April 13, 1907. No. 83868 A.

**Chemical Properties of Malleable Cast-Iron.** G. A. Akerland. Compares malleable and gray iron, showing annealing changes, and giving tests and experiments. 1200 w. Foundry—June, 1907. No. 84590.

**Cast Iron as Cast and Heat Treated.** W. H. Hatfield. A report of research work, discussing the decomposition of carbides, the nature of annealing carbon, and the influence of casting temperatures. Plates. 3800 w. Jour Ir & St. Inst—No. II, 1907. No. 87358 N.

**Manganese in Cast Iron.** Herbert E. Field. Read before the Am. Found. Assn. An explanation of the effects of manganese on cast iron, aiming to reconcile conflicting statements. 2000 w. Ir Trd Rev—June 6, 1907. No. 84735.

## Copper

**Substitutes for Copper.** Calls attention to the present demand for copper, its high price, and the need of substitution or alloying, and explains the advantages claimed for the Monnot process, especially the copper clad wire. 1400 w. Ir Age—April 4, 1907. No. 83436.

**Copper for the Foundry.** F. L. Antisell. Read before the Am. Found. Assn. Discusses points the buyer should consider, such as brand, conductivity, analysis, shape, etc. 1500 w. Foundry—July, 1907. No. 85748.

## Earthenware.

**Making Vitreous Sanitary Ware.** Illustrates and describes the equipment and processes of the potter. 2500 w. Met Work—June 8, 1907. No. 84767.

## Electric Machinery.

**Materials for Electric Machinery.** J. Epstein. Read before the Inst. of Elec. Engrs. Information concerning the selection and testing of materials for the construction of electric machinery, and of the complete electric machines. 6000 w. Engng—Jan. 19, 1907. Serial. 1st part. No. 82001 A.

## Ferro-Alloys.

**Ferro-Alloys for Foundry Use.** E. Houghton. Discusses methods of treatment to secure definite chemical and physical properties in iron, giving analyses of various alloys. 4000 w. Foundry—Sept., 1907. No. 86819.

**Special Ferro-Alloys for the Foundry.** E. Houghton. Read before the British Found. Assn. Considers ferro-manganese and spiegel, silicon-spiegel, ferro-silicon, ferro-chrome and ferro-phosphorus, giving analyses of blast furnace, and of elec-

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trical furnace alloys. 3500 w. Ir & Coal Trds Rev—Sept. 20, 1907. No. 87350 A.

## Finish.

**The Production of the Bower-Barff Finish.** An illustrated detailed description of this black finish for iron and steel and its modifications, giving cost. 3000 w. Brass Wld—Jan., 1907. No. 81937.

## Fire Brick.

**The Use and Abuse of Fire Brick for Locomotive Fire-boxes.** J. E. Bond. Considers general details applying to the manufacture of all fire brick, the care needed, abuse, etc. 1800 w. R R Gaz—June 7, 1907. No. 84812.

## Fireproof Material.

**Artificial Fireproof Stones.** Information in regard to fireproof materials for electric furnaces, smelting furnaces, artificial dinas material, fireproof crucibles, etc. 3800 w. Sci Am Sup—June 8, 1907. No. 84824.

## Initial Stresses.

**The Stresses Remaining in Metals after Cooling (Ueber Bleibende Spannungen in Werkstücken infolge Abkühlung).** E. Heyn. A mathematical discussion of the initial stresses set up in metals during the contraction due to cooling. Ills. Serial. 2 parts. 8000 w. Stahl u Eisen—Sept. 11 and 18, 1907. No. 87615 each D.

## Lead Scrap.

**Tea Lead.** Describes the method of the Chinese in the manufacture of tea-lead, and discusses its value as scrap lead. 1100 w. Brass Wld—Oct., 1907. No. 87858.

## Locomotives.

**The Use of Steel in Locomotive Construction.** F. A. Lart. Discusses the use of the newer and much stronger steel alloys for the construction of locomotives, with a reduction in the proportions and weights of their individual parts. 3500 w. Cassier's Mag—Sept., 1907. No. 86617 B.

## Magnetic Alloys.

**On the Magnetic Properties of Heusler's Alloys.** J. C. McLennan. Abstracted from the *Phys. Rev.* A report of investigations made of these alloys. 1000 w. Elect'n, Lond—Sept. 6, 1907. No. 87067 A.

## Metallography.

**The Uses of Microscopic Metallography in Industry (L'Utilisation Industrielle de la Métallographie Microscopique).** Léon Guillet. Describes the method of preparing and examining specimens and outlines what may be learned through the microscopic study of steels, brass, bronze,

# MECHANICAL ENGINEERING

## Metallography

and other alloys. Ills. Serial. 2 parts. 7000 w. *Génie Civil*—June 15 and 22, 1907. No. 85617 each D.

**Metallography in Practice** (*Metallographie en Practijk*). P. D. C. Kley. An illustrated discussion of several of the industrial applications of metallography. 6000 w. *De Ingenieur*—Aug. 24, 1907. No. 86993 D.

**Etching Malleable Iron for the Visual Investigation of Structure.** Prof. E. Heyn. Abstract of a report presented to the International Assn. for Test. Mat., Brussels Congress. Describes some things that may be learned as to the structure of iron and steel by inspecting etched surfaces, especially with the unaided eye. Ill. 1500 w. *Am Mach*—Vol. 30, No. 23. No. 84797.

**Some Micro-Structural Considerations.** John Magee Ellsworth and Thomas J. Fay. Extract from paper read before Soc of Auto. Engrs. On the defects revealed by micro-photographs, considering normal and abnormal steels, etc. 3500 w. *Automobile*—Oct. 17, 1907. No. 87754.

**The Researches of G. Cartaud on the Passage of Metals from the Liquid to the Solid State** (*Les Recherches de G. Cartaud sur le Passage de l'Etat Liquide à l'Etat Solide*). F. Osmond. Reviews his published work and the researches left uncompleted at his death. Illustrated by 72 microphotographs. 6700 w. *Rev de Métal*—Sept., 1907. No. 87603 E + F.

## Muntz Metal.

**Report on the Decay and Corrosion of Muntz Metal.** W. M. Hamlet. Research work to discover the cause of corrosion and decay of this metal, which is an alloy of zinc and copper used for the protection of ships' bottoms against barnacles, seaweed and other forms of marine life. 900 w. *Min Jour*—April 13, 1907. Serial. 1st part. No. 83877 A.

## Rails.

**Steel Rails.** Robert Job. Considers the effect of structure, heat treatment, the influence of the type of section, overloading, etc. Ills. General discussion. 9200 w. *Pro NY RR Club*—Nov. 16, 1906. No. 80937.

**Open Hearth Steel Rails.** Benjamin Talbot. Discusses the reasons for their displacement of the Bessemer product. 3300 w. *Ir Age*—Feb. 28, 1907. No. 82651.

**Steel Rails.** T. S. Griffiths. Discusses present methods of steel making and the effect on the product, and the causes of inferiority of rails of the present as compared with rails made 10 years ago. 3000 w. *Can Engr*—April 5, 1907. No. 83505.

## MATERIALS OF CONSTRUCTION

## Steels

## Rubber.

**The Mechanical Examination and Analysis of Manufactured Rubber.** Reviews two recent papers, one by Pierre Breuil, the other by Em. Camerman, containing interesting information regarding the mechanical properties of manufactured rubber and its analysis. Gives a summary of the results obtained by different experimenters. 2000 w. *Eng News*—Nov. 22, 1906. No. 80559.

## Solders.

**Solders.** Translated from Edmund Schlosser's "Das Löten und die Bearbeitung der Metalle." A classification and discussion of these mixtures and their manufacture and uses. 3000 w. *Sci Am Sup*—Nov. 10, 1906. Serial. 1st part. No. 80276.

**Tests of Solders** (*Ueber Versuche mit Lötmitteln*). Adolf Lippmann. Discusses a large number of types of solders and describes the results of tests made upon them. Ills. 3500 w. Serial. 1st part. *Elektrotech Zeitschr*—Aug. 29, 1907. No. 86992 D.

See also Solders, under MACHINE WORKS AND FOUNDRIES.

## Specifications.

See same title, under CIVIL ENGINEERING, CONSTRUCTION.

## Steels.

**Steel as an Engineering Material.** William Stuart Standiford. Describes steel made by the crucible, open-hearth, and Bessemer processes discussing its quality, uses, etc. 2000 w. *Ry & Loc Engng*—July, 1907. No. 85427 C.

**The Non-Metallic Impurities in Steel.** E. F. Law. Gives results of observations, considering sulphide of iron, sulphide of manganese, silicate of iron, silicate of manganese and oxide of iron, discussing their effects. Plates. 3700 w. *Jour Ir & St. Inst*—No. II., 1907. No. 87359 N.

**The Use of High-Tensile Steel.** Gives three papers dealing with high-tensile steel in various departments of engineering construction, with discussion. The papers of A. E. Seaton, Edwin William De Russett, and Alfred Fernandez Yarrow, presented at the Engineering Conference. 6000 w. *Ir & Coal Trds Rev*—June 28, 1907. No. 85508 A.

**The Spark Method for Grading Steels.** Albert F. Shore. Describes a method depending on the action of oxygen in the air on the more combustible elements contained in different steels, which tend to act explosively when the proper temperature is reached. Ills. 1000 w. *Am Mach*—Vol. 30, No. 33. No. 86380.

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## Tool Steels

The Hardening of Steel. L. Demozay. Read Before the Ir. & St. Inst. at Vienna. Gives an analysis of the part played by the different factors under which the changes in the metal take place. 4500 w. Ir & Coal Trds Rev—Sept. 27, 1907. No. 87704 A.

The Influence of Temperature on the Brittleness of Metals (Sur l'Influence de la Température sur la Fragilité des Métaux. G. Charpy. Drop tests on five bars of steel of various makes and with various alloys. Curves and tables. 1800 w. Mem Soc Ing Civ de France—Oct., 1906. No. 81124 G.

Brittleness in Steel. C. E. Stromeyer. From the annual report for 1905 to the Manchester Steam Users' Assn. Observations made in English boiler plate practice. 2700 w. Ir Age—Nov. 22, 1906. No. 80512.

Brittleness of Mild Steel. Abstract of a report by C. E. Stromeyer, to the Manchester Steam Users' Assn. Discusses the cause of brittleness, the effect of treatment, etc. 2000 w. Sci Am Sup—Jan. 12, 1907. No. 81571.

The Ageing of Mild Steel. C. E. Stromeyer. A report of the writer's investigations, describing tests made. 1100 w. Ir & Coal Trds Rev—May 10, 1907. No. 84620 A.

Further Experiments in the Ageing of Mild Steel. C. E. Stromeyer. Read at Vienna meeting of the Ir. & St. Inst. Gives tests of steel plates and results, with micrographs, and deductions drawn. 4800 w. Ir & Coal Trds Rev—Sept. 27, 1907. No. 87705 A.

The Time-Factor in the Resistance of Materials. Editorial on the effect of the time-factor, referring to recent paper by Mr. Stromeyer. 2200 w. Engng—March 22, 1907. No. 83484 A.

Behavior of Carbon and Phosphorus in Steel. Henry M. Howe. A discussion of J. E. Stead's explanation of the banding of carbon and phosphorus and the theory of incompatibility. 3000 w. Eng & Min Jour—June 8, 1907. No. 84837.

Hardened Steels. Percy Longmuir. Read before the Ir. & St. Inst at Vienna. Indicates briefly some variables in the case of carbon steels. Ills. 1800 w. Mech Engr—Oct. 5, 1907. No. 87585 A.

See also Alloy Steels, Thermit Steel and Tool Steels, under MATERIALS OF CONSTRUCTION; and Testing Methods, under MEASUREMENT; and Case Hardening, under MACHINE WORKS AND FOUNDRIES.

## Steel Sheets.

### I. History of the Development of the

Manufacture of Iron and Steel Sheets. W. C. Cronmeyer. II. Sheet Metal Manipulation. Frank I. Ellis. Two papers discussed together. Ills. 11000 w. Pro Engrs' Soc of W Penn—May, 1907. No. 84624 D.

Tests of Very Mild Steel Tube Sheets. A report of tests recently made at the repair shops of the Prussian railroads, describing a new sheet the construction of which meets the requirements of the heaviest service. Ills. 1000 w. R R Gaz—June 7, 1907. No. 84810.

## Steel Tubes.

Pressures on Lap-Welded Steel Tubes. Prof. Reid T. Stewart. Supplement to an earlier paper on the effects of the distortion due to successive re-tests on the collapsing pressures of 10-inch lap-welded steel tubes. 1500 w. Pro Am Soc of Mech Engrs—May, 1907. No. 84501.

## Testing Machine.

Sankey's Workshop Testing-Machine. Illustrated description of this machine and its operation. 1200 w. Engng—Feb. 15, 1907. No. 82608 A.

## Thermit Steel.

Thermit Steel. Gustav Reiniger. A report of tests made with the object of deciding on the possibility of producing thermit steel of the same strength as the hard steels at present produced. Ills. 4000 w. Jour U. S. Art—July, 1907. No. 87094 D.

## Tool Steels.

The Manufacture of Tool Steel. E. T. Clarage. Address before the N.-W. Ry Club, giving facts of interest in regard to this industry. 3000 w. Am Mach—Vol 29. No. 44. No. 80174.

Annealing High-Speed Steel. Ethan Viall. Gives replies to an inquiry sent to prominent makers of high speed steel as to the best way to anneal their particular brand. 1200 w. Am Mach—Vol. 30, No. 35. No. 86625.

The Development of High-Speed Steel in Germany (Die Entwicklung des Schnellarbeitstahles in Deutschland). O. Thallner. History, chemical analyses, description of processes of manufacture, micrographs, practical experience. 6000 w. Zeitschr d Ver Deutscher Ing—Oct. 20, 1906. No. 80600 D.

An Analysis of the Evolution of Modern Tool-Steel. Prof. H. C. H. Carpenter. A paper inspired by the presidential address of F. W. Taylor, aiming to trace the evolution of tool steel in the light of recent knowledge. The present number considers current theories of hardening,

## MECHANICAL ENGINEERING

### Tool Steels

and the wear of tools in cutting metals. 4800 w. Engng—May 3, 1907. Serial 1st part. No. 84340 A.

A Study of Hardness in Tool Steels (Etude de la Dureté dans les Aciers à Outils de Tour). M. Demozay. A discussion of the effects of heat treatment on alloy steels of various compositions in their relation to hardness and durability. Ills. 5500 w. Rev de Métal—Sept., 1907. No. 87605 E + F.

See also Alloy Steels and Steels, under MATERIALS OF CONSTRUCTION; and Cutting Metals, under MACHINE WORKS AND FOUNDRIES.

### Wastes.

Utilization of Waste Materials. Dr. Theodor Koller. The present article considers wood waste, and horn shavings. 5500 w. Sci Am Sup—Nov. 10, 1906. Serial. 1st part. No. 80279.

### MEASUREMENT

### Cooling Curves

The Systematic Treatment of Metal-liferous Waste. L. Parry. The present article discusses the general economic principles, the valuation of various waste products, and the sources of supply. 3000 w. Min Jour—July 6, 1907. Serial. 1st part. No. 85587 A.

### Wire Rope.

The Strength of Wire Rope (Die Beanspruchung von Drahtseilen). J. Isaachsen. Mathematical discussion of the stresses set up in wire rope under tension and flexure. Diagrams. 5000 w. Zeitschr d Ver Deutscher Ing—April 27, 1907. No. 84148 D.

### Wrought Iron.

The Structure of Wrought Iron. Albert Sauveur. Gives reproductions of typical drawings and photomicrographs illustrating and describing the structure clearly. 800 w. Elec-Chem & Met Ind—April, 1907. No. 83538 C.

## MEASUREMENT

### Accuracy.

On Accuracy in Mensuration and Calculation. Defines accuracy as distinct from sensitiveness, and discusses the advantage of expressing approximate results in measuring in few figures. 4500 w. Engr, Lond—Sept. 6, 1907. No. 87084 A.

### Air Blow.

Flow of Air in Nozzles. Frank Foster. An investigation, especially of the conditions in ordinary gas-turbine work. 1500 w. Mech Engr—Oct. 27, 1906. Serial. 1st part. No. 80297 A.

### Air Resistance.

Canovetti's Air-Resistance Experiments. An illustrated account of investigations made by this Italian engineer on the Como Brunate inclined plane. 1200 w. Sci Am—Feb. 23, 1907. No. 82575.

Air Pressure on a Moving Surface (Pression de l'Air sur une Surface en Mouvement. Etude due Coefficient K). J. Rodet. Mathematical treatment. Diagrams. 1900 w. Revue de Mécanique—Jan., 1907. No. 82343 E + F.

### Anemometer.

A Recording Anemometer. J. Rogers Preston. Prize paper read before the Inst. of Heat. & Vent. Engrs., London. Illustrated description. 2000 w. Met Work—Oct. 12, 1907. No. 87572.

### Calipers.

See Calipering, under MACHINE WORKS AND FOUNDRIES.

### Calorimeters.

The Wallace Alcohol Calorimeter. Diagram and description of the instrument devised by Prof. Wallace for the heat-measuring liquid. 1700 w. Engr, Lond—Dec. 21, 1906. No. 81344 A.

Beasley's Recording Gas-Calorimeter. Illustrated detailed description of a new form of calorimeter giving the low-value calorific power. 2000 w. Engng—July 12, 1907. No. 85871 A.

### Color Meter.

A New Color Meter. Frederic E. Ives. Describes a direct vision instrument with all the operating adjustments controlled by screws a few inches from the eye, and its operation. 3500 w. Jour Fr Inst—July, 1907. No. 85703 D.

### Comparator.

Mirror Comparator (Comparateur à Miroir). Joseph Rodet. A description of the construction of this instrument for measuring small displacements and a mathematical discussion of its use. Ill. 1200 w. L'Elec'n—March 30, 1907. No. 83691 D.

### Cooling Curves.

Methods in Obtaining Cooling Curves.



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## Cylinders

C. L. A. Schmidt. Brief explanation of methods, with illustrations of apparatus used. 1600 w. Cal Jour of Tech—May, 1907. No. 84650.

## Cylinders.

Test of Tube-Connected Cylinders. S. F. Jeter. Gives a cylinder head designed by the writer and results of a series of comparative tests made between that form and the regular bumped head. Ills. 700 w. Power—Sept., 1907. No. 86674 C.

## Dynamometers.

Improved Transmission Dynamometer. W. F. Durand. Illustrated description. 1000 w. Pro Am Soc of Mech Engrs—Nov., 1906. No. 80529.

Modern Water-Wheel Testing. Brief illustrated description of the Alden Absorption Dynamometer for testing wheels of large powers, and its use. 1500 w. Jour Worcester Poly Inst—Jan., 1907. No. 81778 C.

On Some Forms of Rotative Output Dynamometers. W. W. F. Pullen. The present article deals with the absorption, or output dynamometers, the difficulties of their operation and the methods of surmounting them. Ills. 2800 w. Mech Engr—Feb. 23, 1907. Serial. 1st part. No. 82825 A.

Something New in the Measure of Power. Illustrates and describes a piece of apparatus which, while retaining the conveniences of the electric motor as a source of power in power tests, gives the power measurements directly. 700 w. Am Mach—Vol. 30, No. 27. No. 85460.

## Friction.

Testing Machine for Oils, Bearings, and Journals; Cooper's Hill College. Illustrated description of a machine designed on new lines, by James Hopps, for testing oils, as well as the friction of journals and bearings of different alloys. 1200 w. Engng—Nov. 2, 1906. No. 80358 A.

## Gauges.

See same title, under MACHINE WORKS AND FOUNDRIES.

## Hardness.

Testing Hardness of Metals and Materials. W. J. Ballentine. Describes a process making use of a new form of impact-testing instrument which is simple in construction. 1700 w. Am Mach—Vol. 30, No. 20. No. 84377.

Brinell's Method for Testing the Hardness of Metals. J. E. Stead and T. Greville-Jones. Description and results of this method, which consists in forcing a hard steel ball into the material to be

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tested under a given pressure, measuring the depression. 1300 w. Ir & Coal Trds Rev—April 12, 1907. No. 83888 A.

## Metric System.

Our Present Weights and Measures and the Metric System. Henry R. Towne. An argument for a Technical Commission to study and report upon the whole question of weights and measures. 12800 w. Pro Am Soc of Mech Engrs—Nov., 1906. No. 80525 C.

Our Present Weights and Measures and the Metric System. Discussions of Henry R. Towne's paper on this subject, contributed by members. 11500 w. Pro Am Soc of Mech Engrs—Dec., 1906. No. 81065 C.

Our Present Weights and Measures and the Metric System. Discussion of paper by Henry R. Tame on this subject. 5800 w. Pro Am Soc of Mech Engrs—March, 1907. No. 83168 C.

Some Objections to the Compulsory Introduction of the Metric System. C. M. Watson. Discusses the arguments usually presented in favor of this system, and gives reasons against its compulsory introduction. Also general discussion. 12600 w. Jour Soc of Arts—Dec. 7, 1906. No. 81014 A.

## Mouthpieces.

The Strength of a Mouthpiece Ring and Cover. Gives the calculations made for figuring the strength of a cover and mouthpiece ring, calling attention to points in the designing of such vessels. Ills. 2200 w. Mach, N Y—Nov., 1906. No. 80167 C.

## Pallograph.

Machine for Recording the Vibration of Ships. Daniel M. Luehrs. Illustrates and describes an invention of E. Otto Schlick, explaining its method of recording. 1800 w. Sci Am—Feb. 9, 1907. No. 82176.

## Polygons.

Computation Table for Regular Polygons. W. L. Benitz. Gives two tables aiming to simplify the calculations for any required dimensions of regular polygons. 800 w. Am Mach—Vol. 30, No. 21. No. 84490.

## Pressure Gauges.

History and Construction of Pressure Gauges. C. E. Stromeyer. From the annual memorandum issued by the Chief Engineer to the Manchester Steam Users' Assn. Gives the history of the development of pressure gauges, and describes various instruments. 4000 w. Mech Engr

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## Pyrometry

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## Standards

—Aug. 17, 1907. Serial. 1st part. No. 86586 A.

The Accuracy of Pressure-Gauges. An account of tests made at the National Physical Laboratory in England. 1500 w. Engng—Aug. 23, 1907. No. 86734 A.

### Pyrometry.

Uehling Pyrometer Improvement. Illustrates and describes the development of a multiple recording pneumatic pyrometer. 1200 w. Ir Age—Jan. 10, 1907. No. 81516.

Principle and Operation of the Féry Radiation Pyrometer. C. H. Wilson and Frederick Maülen. Illustrates and describes this instrument for measuring all temperatures over 500° C. (932° F.) by merely sighting a telescope at the hot body and reading the results direct from a needle over a graduated scale of a millivoltmeter. 2000 w. Sch of Mines Qr—April, 1907. No. 85019 D.

Sentinel Pyrometers. Discusses their application to the annealing, hardening and general treatment of tool steel. 2000 w. Ir Age—June 13, 1907. No. 85004.

Sentinel Pyrometers and Their Application to the Annealing, Hardening, and General Heat Treatment of Tool Steel. Harry Bearley and F. Colin Moorwood. An account of the use of sentinel pyrometers showing their practical utility. 3000 w. Ir & Coal Trds Rev—May 10, 1907. No. 84618 A.

Optical Pyrometry. Dr. L. Holborn. Read before the British Assn. Discusses the method of measuring high temperatures based on the distribution of energy in the spectrum, and the increase of energy between the wave-lengths as the temperature rises. 4000 w. Engng—Sept. 6, 1907. No. 87081 A.

Optical Pyrometry. Dr. Charles Féry. Read before the British Assn. Illustrates and describes the Le Chatelier radio-pyrometer as modified by the writer. 1500 w. Engng—Oct. 18, 1907. No. 87961 A.

The Thwing Electric Pyrometers. Illustrated detailed description of types of this radiation pyrometer. 1800 w. Ir Age—Aug. 1, 1907. No. 86036.

The Electrical Measurement of Temperature (Misura Elettrica delle Temperatura). A discussion of the theory of electrical pyrometry with brief details of construction and operation of various systems. 2400 w. Elettricità—July 12, 1907. No. 86216 D.

High Temperature Measurements. Thomas C. McKay. Indicates the industrial applications of electrical and radiation thermometers, describing types. 1500

w. Cal Jour of Tech—Aug., 1907. No. 87096.

Pyrometry in Modern Workshop Practice. Charles R. Darling. Discusses various types of industrial pyrometers, showing that no single pyrometer is suited to every operation, and that the instruments should be fitted for the purpose intended. Ills. 5000 w. Engr, Lond—June 14, 1907. No. 85246 A.

Thermometers and Pyrometers. Robert S. Whipple. Address delivered before the Syracuse, N. Y., Chem. Soc. and the Tech. Club. An account of some of their industrial applications. Ills. 5500 w. Ir Age—Feb. 7, 1907. No. 82164.

Practical Pyrometry. Robert S. Whipple. Illustrates and describes many types of thermometers and some of the applications. Discussion. 6500 w. Jour W Soc of Engrs—April, 1907. No. 84529 D.

### Regulations.

Weights and Measures Regulations. Information concerning the new regulations of the British Board of Trade, which come into force Oct. 1, 1907. 2500 w. Ir & Coal Trds Rev—Sept. 13, 1907. No. 87183 A.

### Shearing Strains.

Shearing Strains in the Material of Rotating Bodies (Ueber die Materialbeanspruchung in rotierenden Körpern). Edmund Röggl. Mathematical treatment. Diagrams. 3000 w. Zeitschr d Oesterr Ing u Arch Vereines—March 8, 1907. No. 83657 D.

### Slide Rules.

Notes on Slide Rules (Note Relative aux Abaques à Alignement). Dr. G. Dumas. Discussion of slide rules for various purposes, and of their theory. Diagrams. Serial. 2 parts. 5500 w. Bull Tech d la Suisse Romande—Oct. 25, Nov. 10, 1906. No. 80642 each B.

A Cost-Estimating Slide Rule. W. L. Miggett. Describes a multiple slide rule and explains its use, giving examples of its application. 2500 w. Am Mach—Vol. 29. No. 51. No. 81074.

A Time and Cost Computer for the Boring Mill. William Cox. Describes a circular slide rule in which the various scales have been given special values corresponding to the elements in the required calculation. 500 w. Am Mach—Vol. 30, No. 24. No. 85012.

### Standards.

Errors in and Limits of Workmanship. Conclusions from two comprehensive reports of the British Engineering Standards Committee. 1200 w. Am Mach—Vol. 30. No. 1. No. 81485.

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## Strobograph

### Strobograph.

The Strobograph, an Apparatus for Tracing the Curves due to Periodic Oscillations (Der Strobograph, eine Vorrichtung zum Aufzeichnen von Pendeldiagrammen). G. Wagner. Description of a device for photographing the periodic changes of harmonic vibrations. Ills. 3300 w. Zeitschrift Des Vereines Deutscher Ingenieure—Dec. 8, 1906. No. 81826 D.

### Tachometer.

Influence of a Tachometer on Governor Regulation (Der Einfluss des Tachometers auf den Reguliervorgang indirekt wirkender Regulatoren). Philipp Ehrlich. Mathematical analysis and treatment of the subject. Diagrams. Serial. 3 parts. 7200 w. Elektrotech und Maschinenbau—Jan. 13, 20 and 27, 1907. No. 82339 D.

### Test Indicator.

Toolmakers' Universal Test Indicator. J. D. Stryker. Illustrated description. 600 w. Am Mach—Vol. 30, No. 38. No. 87109.

Inspecting Tools with the Test Indicator. J. H. Boulet. Illustrates and describes a number of methods of testing and measuring various classes of tools. 1800 w. Am Mach—Vol. 30. No. 42. No. 87733.

### Testing Engineer.

The Testing Engineer. Chas. P. Dudley. Address (slightly condensed) delivered before the Am. Soc. for Test. Mat. Remarks on the work of the testing engineer and the preparation needed. 4000 w. Elec Jour—Nov., 1906. No. 80284.

### Testing Machines.

Electric Beam Balancing Device for Testing Machines. Illustrates and describes an automatic beam-balancing apparatus devised by G. A. Julius for use in making a large number of tests on the mechanical properties of Australian timbers. 1500 w. Elec Engr, Lond—April 5, 1907. No. 83738 A.

An Electrically Controlled Single-Lever Testing-Machine and Some Torsion Tests. Charles E. Larard. A full illustrated description of the essential parts of the latest of J. Hartley Wicksteed's testing machines. 6000 w. Inst of Mech Engrs—July, 1907. No. 86355 N.

New Machines and Methods for the Testing of Metals (Nouveaux Mécanismes et Nouvelles Méthodes pour l'Essai des Metaux). Pierre Breuil. The first instalment illustrates and describes various types of extensometer. 8500 w. Serial.

## MEASUREMENT

## Testing Methods

1st part. Rev d Mécan—June 30, 1907. No. 86206 E + F.

### Testing Materials.

The Fourth Congress of the International Association for the Testing of Materials, at Brussels, September, 1906 (IV. Congrès de l'Association Internationale pour l'Essai des Matériaux de Construction, Bruxelles, Septembre, 1906). Illustrated account of exhibits and subjects discussed. Serial. 1st part. 3000 w. Génie Civil—Nov. 3, 1906. No. 80629 D.

A Study of the Molecular Changes of a Steel Rod under Tensile Stress (Studie über die Molekularen Veränderungen eines durch Zug Beanspruchten Stahlstabes). Capt. Max Kralupper. Determination of the elastic limit magnetically, and other experimental and theoretical studies. Diagrams. Serial. 1st part. 1600 w. Oest Zeitschr f Berg u Hüttenwesen—Dec. 1, 1906. No. 81115 D.

The Heating of Metals in Tension Tests (Die Wärmevergänge Beim Längen von Metallen). Dr. H. Hort. Illustrated description of experiments on bars of iron, of copper and of steel, to determine the heating effects above the elastic limit. 2500 w. Zeitschr d Ver Deutscher Ing—Nov. 10, 1906. No. 80618 D.

See also Laboratories, under INDUSTRIAL ECONOMY.

### Testing Methods.

Modern Methods of Mechanical Testing of Metallurgical Products (Les Méthodes Modernes d'Essais Mécaniques des Produits Métallurgiques). L. Guillet. A description of the evolution of testing methods, the most modern developments, and the conclusions which may be drawn from them, beginning with tension tests. Ills. 8000 w. Serial. 1st part. Rev Gen d Sci—Aug. 15, 1907. No. 86919 D.

The Testing of Hardened Steel with Consideration of Spherical Bodies (Prüfverfahren für gehärteten Stahl unter Berücksichtigung der Kugelform). R. Striebeck. Discusses the testing of ball bearings and hardened steels in general, giving results. Ills. 5000 w. Serial. 1st part. Zeitschr d Ver Deutscher Ing—Sept. 14, 1907. No. 87650 D.

The Actual Status of the Drop Test on Nicked Bars (Ueber den gegenwärtigen Stand der Schlagbiegeprobe mit eingekerbten Stäben). A discussion of this method of testing, outlining the researches which have been made as to its accuracy and utility. 2500 w. Serial. 1st part. Stahl u Eisen—July, 31, 1907. No. 86232 D.

See also Testing Machines, under MEASUREMENT.

## MECHANICAL ENGINEERING

### Torsionmeters

### POWER AND TRANSMISSION

### Air Compressors

#### Torsionmeters.

A New Torsion Meter for Measuring the Power of Marine Steam Turbines. Frank C. Perkins. Illustrated description of an instrument and method for measuring the power of steam turbines when applied to ship propulsion. 1000 w. *Int Marine Engng*—Dec., 1906. No. 80562 C.

Torsionmeters as Applied to the Measurement of Power in Turbines and Reciprocating Engines. Archibald Denny. Read before the Inst. of Naval Archts. Illustrates and describes instruments used on turbine engines to determine their efficiency. 2200 w. *Mech Engr*—April 6, 1907. No. 83736 A.

Torsometers. Archibald Denny. Read before the Inst. of Naval Archts. Deals with torsometers as applied to the measurements of power in turbines and reciprocating engines. Ills. 2200 w. *Jour. Am Soc of Nav Engrs*—May, 1907. No. 85765 H.

A New Torsion-Meter. B. Hopkinson and L. G. P. Thring. Describes an apparatus designed by the authors, reporting tests. Ills. 2700 w. *Engng*—June 14, 1907. No. 85242 A.

The Static Deflection of Turbine Rotors. R. H. Collingham. Shows how, by the aid of graphits, the deflection of any body of varying section, such as a turbine rotor, may be arrived at with a sufficient degree of accuracy for all practical purposes. 2000 w. *Engr, Lond*—March 29, 1907. No. 83550 A.

#### Venturi Meter.

The Flow of Fluids in a Venturi Tube. Edgar Park Coleman. Describes tests showing that the Venturi tube is an instrument of convenience and precision when used for measuring the quantity of air or gas (and in some cases of steam) flowing through it. Ills. 200 w. *Pro Am Soc of Mech Engrs*—Nov., 1906. No. 80527.

The Venturi Meter. Illustrates and describes the design, explaining the principle involved. 500 w. *Prac Engr*—Feb. 15, 1907. Serial. 1st part. No. 82594 A.

#### Vibration.

Instruments for Measuring the Secondary Movements of Vehicles in Motion. M. Sabouret. Translated from the French. Describes apparatus for recording secondary movements, combined secondary movements, and divided secondary movements. Diagrams. 1000 w. *Eng News*—Nov. 15, 1906. No. 80445.

#### Water Gages.

Water Level Gages. Robert E. Horton. Illustrates and describes styles of river gages designed by the writer. 1300 w. *Eng News*—Aug. 22, 1907. No. 86514.

#### Weighing Machines.

Automatic Coin-Weighing Machines. A. L. Lambert. Illustrated description of one of the new machines made at the machine shops of the Philadelphia mint. 1200 w. *Am Mach*—Vol. 30, No. 27. No. 85464.

Machine for Weighing the Forces on a Cutting Tool. John F. Brooks. Read before the British Assn. Illustrated description of an apparatus for measuring the three component forces which result in the formation and separation of a chip of metal in a lathe, explaining the principle of its operation. 900 w. *Engng*—Aug. 23, 1907. No. 86730 A.

#### Wind Gage.

A New Direct-Reading Wind Gage. Dr. Alfred Gradenwitz. Illustrates and describes a novel wind gage constructed by Max Kohl, and also a wind gage constructed on plans by E. Geyer which renders it possible to read the direction of the wind both by day and night at any distance. 1200 w. *Sci Am Sup*—May 18, 1907. No. 84394.

## POWER AND TRANSMISSION

### Air Compressors.

The Antecooler, the Intercooler, and the Aftercooler. Frank Richards. Presents the advantages gained by the use of the intercooler. 1800 w. *Compressed Air*—Jan., 1907. No. 81790.

The Antecooler, the Intercooler, and the Aftercooler. Frank Richards. Information concerning these useful devices in air compression. 1500 w. *Compressed Air*—July, 1907. No. 85898.

The Use of Coolers in Air Compres-

sion. Frank Richards. Points out the advantages, and discusses cost, the two-stage system, and other matters. 1200 w. *Eng & Min Jour*—June 1, 1907. No. 84707.

Reading Two-Stage Air-Compressor-Indicator Cards. Frank Richards. An explanation, with cards from a compressor tested. 1600 w. *Power*—April, 1907. No. 83242 C.

Standards of Efficiency in Compressed Air Practice—The Air Compressor as an

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## Air Compressors

Air Meter. Frank Richards. Considers the indicator card as a basis for computing efficiency, the influence of temperature, and the effect of air valves. 1800 w. Mach, N Y—June, 1907. No. 84693 C.

Compressed Air and the Kinetic Theory of Gases. J. H. Hart. Shows how this theory makes clear obscure points. 2000 w. Power—Oct., 1907. No. 87268 C.

Theory of Operation of Air Compressors (Die Wirkungsweise der Pressluftpumpen). L. Darapsky and F. Schubert. Comprehensive discussion. Ills. Serial. 2 parts. 6600 w. Zeitschrift Des Vereines Deutscher Ingenieure—Dec. 22 and 29, 1906. No. 81831 each D.

Compressed Air Curves and Tables. L. L. Willard. Gives formulæ for calculating the horse-power required to compress a given volume of free air to a given pressure and curves plotted from values found, with tables. 800 w. Compressed Air—Nov., 1906. No. 80390.

Greater Economy Needed in the Production of Compressed Air. Considers the saving in power possible by cooling during compression, clearance in compressor cylinders, and factors affecting compressor capacities. 2200 w. Sci Am Sup—Dec. 22, 1906. No. 81090.

Clearance in a Compressor, and Its Relation to Volumetric Efficiency. D. W. Hering. A mathematical discussion. 1500 w. Compressed Air—Jan., 1907. Serial. 1st part. No. 81791.

Some Features of Air Compression. C. A. Dawley. Reviews the development of air compressors, discussing the factors affecting the economy, the losses, and related subjects. 1100 w. Sib Jour of Engng—March, 1907. No. 83287 C.

Reciprocating Air-Compressors. W. Reavell. Deals with the features which are necessary to obtain high efficiency. 1200 w. Compressed Air—Sept., 1907. No. 86711.

Piston Compressors and Turbo-compressors (Kolbenkompressor und Turbo-kompressor). E. W. Köster. Discussion of the relative advantages of the two kinds. Tables. 1900 w. Glückauf—Dec. 29, 1906. No. 82322 D.

Some Important Elements of Economy in the Straight Line and Duplex Types of Compound Air Compressors. Lucius I. Wightman. Explains the advantages of compounding the relation of power to resistance in each type, losses, etc. Ills. 2000 w. Compressed Air—March, 1907. Serial. 1st part. No. 83301.

Sectionalized Air Compressors. Frank Richards. An illustrated article discuss-

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ing sectionalized machines, their advantages and disadvantages. 1000 w. Am Mach—Vol. 30, No. 10. No. 82792.

A Month's Output of Air Compressors. Frank Richards. Gives information showing the rapid growth of air-power and the many applications. 1700 w. Compressed Air—Sept., 1907. No. 86710.

The Most Suitable Motive Power for Compressors (Zur Frage des Zweckmässigsten Antriebs für Kompressoren). Fr. Harth. A detailed analysis of the costs of driving an air compressor by steam and by electric power. Ills. 3300 w. Glückauf—June 29, 1907. No. 85634 D.

The New Franklin Air Compressors. Illustrated description of compressors made in Chicago. 1600 w. Ir Age—May 9, 1907. No. 84278.

The New Franklin Air Compressor. Illustration, with description. 1500 w. Foundry—July, 1907. No. 85751.

The Flickinger Gas Driven Air Compressor. Illustrated detailed description of a combination of a gas engine and air compressor. 1200 w. Ir Age—March 7, 1907. No. 82789.

A High Duty Air Compressor. O. P. Hood. Reports the results found in a test of a high duty air compressor installed at the Champion copper mine at Painesdale, Mich. Ills. 3000 w. Pro Am Soc of Mech Engrs—Nov., 1906. No. 80521 C.

1,200 Horse-Power Air Compressor. Illustrated description of a plant recently installed at the Seaham Colliery. 1500 w. Engr, Lond—Oct. 11, 1907. No. 87841 A.

A Hydraulic Air-Compressing Plant. Illustrated description of the plant at the Victoria mine in the northern part of Michigan. A column of water sucks down the air which is trapped in a chamber and used for driving pneumatic machinery. 1200 w. Sci Am—March 16, 1907. No. 83018.

Care of Air Governors. H. Schlegel. Gives a diagram showing the connections of the Christensen air governor, and explains its automatic operating features. 1000 w. St Ry Jour—Dec. 29, 1906. No. 81320.

See also Blowing Engines, Tidal Power and Turbo-Compressors, under POWER AND TRANSMISSION.

## Ball Bearings.

Elimination of Friction in Ball Bearings. J. F. Springer. Analyzes the sources of friction, showing the importance of this question in view of the application of such bearings in heavy work. Ills. 2000 w. Am Mach—Vol. 30, No. 30. No. 85883.

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## Bearings

Ball and Roller Bearings. J. F. Springer. Discusses the use of separators to reduce friction. 1200 w. *Ir Age*—Oct. 17, 1907. Serial. 1st part. No. 87737.

See also same title, under MACHINE WORKS AND FOUNDRIES; and Testing Methods, under MEASUREMENT.

## Bearings.

Bearings and Their Lubrication. Francis H. Davies. Discusses methods of lubricating, the importance of good lubricating oils, hot bearings, etc. 2000 w. *Elec Wld*—Feb. 2, 1907. No. 82134.

The Care and Repair of Bearings. Herbert L. Towle. Considers bearing materials, bearing fit, wear, repair, lubrication, etc. Ills. 3500 w. *Rudder*—May, 1907. No. 84264 C.

See also same title, under MACHINE WORKS AND FOUNDRIES; and Alloys, under MATERIALS OF CONSTRUCTION.

## Belts.

Shop Belting Practice on the Santa Fé. Gives the specifications and repairmen's rules and instructions drawn up by Mr. H. Emerson, which have given great improvement in shop belting practice. Ills. 3000 w. *R R Gaz*—Jan. 25, 1907. No. 81923.

Power Transmission by Belts and Ropes (Cinghie e Corde per Trasmissioni). Gino Scanferia. The first part discusses the stretching of leather and the theory of belt design. 3000 w. Serial. 1st part. *Il Monit Tec*—July 20, 1907. No. 86219 D.

The Determination of Length of Belts and Diameters of Cone Pulleys. Mathematical. 400 w. *Prac Engr*—Sept. 6, 1907. No. 87051 A.

Pull of Belts. V. C. Wynne. Discusses tension of belts, sag, weight, and methods of maintaining tension. 1500 w. *Engr, U S A*—Sept. 16, 1907. No. 87047 C.

## Belt Tightening.

Power Transmission by Artificially Tightened Belts, Particularly the "Lenix" System (Sur la Transmission par Courroie à Tension Artificielle, en particulier le Système "Lenix"). P. Daubresse. Paper read before the International Congress at Liège, 1905. Describes various systems of belt tighteners with mathematical discussion of their design. Ills. 9500 w. *L'All Indus*—June, 1907. No. 85612 D.

## Blowing Engine.

A New Blowing Engine for Steel Works (Neue Stahlwerks-Gebläsemaschine). Oskar Simmersbach. Illustrated description of compound steam blowing engine, with indicator diagrams. 1 plate.

## POWER AND TRANSMISSION

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400 w. *Stahl u Eisen*—Nov. 1, 1906. No. 80676 D.

A Novel Blowing Engine. An illustrated description of the Nordberg blowing engine, which has an entirely new positive valve motion giving extra large valve areas. 2200 w. *Am Mach*—Vol. 30, No. 6. No. 82165.

## Cableways.

A Bleichert Cableway in the Mountains of Northern Argentina (Die Erschließung der Nordargentinischen Kordilleren Mittels einer Bleichterschen Drahtseilbahn für Güter und Personen). G. Dieterich. A very complete illustrated description of an aerial tramway for passengers and freight, from Chilecito to the Famatina copper mines, 21.5 miles long, overcoming a difference of elevation of 11,500 feet. Serial. 1st part. 3500 w. *Zeitschr d Ver Deutscher Ing*—Nov. 3, 1906. No. 80607 D.

Aerial Rope-Way in Argentina. An account of a rope-way constructed under great difficulties, in the Andes, for the purpose of developing valuable mines. 1000 w. *Engr, Lond*—Dec. 28, 1906. No. 81546 A.

A Wire Rope Railway Used in the Construction of an Italian Fortress. Dr. Alfred Gradenwitz. Illustrated description of a ropeway remarkable for its enormous spans and for the great altitude it reaches. 1200 w. *Sci Am*—April 6, 1907. No. 83462.

Wire Rope Tramway Engineering. S. S. Webber. An illustrated article considering this means of transporting and the conveyors and appliances used. 3800 w. *Cassier's Mag*—Dec., 1906. No. 80749 B.

Cableways Used on Shipbuilding Berths. John M. Henderson. An illustrated description of the equipment of the Jarrow Yard, for handling heavy material. 5 plates. 2500 w. *Inst of Mech Engrs*—July, 1907. No. 86352 N.

## Chain Driving.

The Morse Chain on Cone Sprockets. Illustrates and describes a mechanical device forming a substitute for cone pulleys and belts and for gear boxes for main drives. 1000 w. *Am Mach*—Vol. 30, No. 29. No. 85773.

## Clutches.

The Principles of Friction Clutches. Herbert Aughtie. An analysis of the forces of action. 1500 w. *Mech Engr*—Dec. 29, 1906. Serial. 1st part. No. 81521 A.

# MECHANICAL ENGINEERING

## Coal Handling

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### Coal Handling.

Coal and Coke Handling at the Astoria Light, Heat & Power Co.'s Plant, Astoria, L. I. Alfred Kauffmann. Illustrated description of this installation. 1500 w. Eng News—July 11, 1907. No. 85574.

Some Notes on the Mechanical Equipment of Collieries. E. M. Hann. Read before the Inst. of Mech. Engrs. Describes the equipment at the Bargoed Colliery. Electricity is extensively used. 4000 w. Mech Engr—Nov. 10, 1906. No. 80475 A.

Coal Storage and Coal Conveying Systems. Franz Koester. Illustrates and describes some of the modern methods employed in handling fuel for large power stations at home and abroad. 3800 w. Power—April, 1907. No. 83244 C.

Some Recent Mechanical Coal Storage Plants. Wilbur G. Hudson. Discusses storage of anthracite and bituminous coal, the systems installed, etc. Ills. 4000 w. Eng News—Aug. 29, 1907. No. 86628.

### Compressed Air.

Some Recent Advances in the Application of Compressed Air. W. L. Saunders. Remarks on methods for securing economy in the use of compressed air, and the advantages that have followed. 2200 w. Cassier's Mag—Dec., 1906. No. 80747 B.

The Proper Installation and Use of Compressed Air in Railway Shops and Manufacturing Establishments. W. P. Pressinger. Deals with pneumatic tools, their applications and related subjects. Discussion. 7500 w. Pro Cent Ry Club—May 10, 1907. No. 85043 C.

The Compressed Air Bar. A. C. Muehold. Explains the uses of this invention for storing compressed air, with illustrated description. 1000 w. Compressed Air—June, 1907. No. 85260.

The Flow of Air in Long Tubes with Special Reference to Pneumatic Dispatch. B. C. Batcheller. Formulae expressing the flow of air in tubes, illustrated by examples. 2500 w. Compressed Air—April, 1907. Serial. 1st part. No. 83952.

### Conveyors.

Modern Charging Apparatus for Blast Furnaces (Moderne Hochofen-Begichtungs-anlagen). Illustrated description of inclined elevators for raising the material to the top of furnace, built by the Benrath Machine Works. 2000 w. Stahl u Eisen—Nov. 1, 1906. No. 80675 D.

Apparatus for Conveying and Piling Timber. Illustrated description of a special type of conveyor for unloading

timber rapidly. 800 w. Engr, Lond—Jan. 18, 1907. No. 81994 A.

### Cost.

Economy in Power. A. Stucki. Discusses the question of relative economy in fuel and briefly considers the cost and maintenance of the installation, reliability, safety, attendance, and adaptability. 2500 w. R R Gaz—May 10, 1907. No. 84288.

Power Costs. Charles E. Lucke. Read before the Am. Elec. Chem. Soc. A comparison of costs of water, steam, oil, and gas power, with discussion. 4800 w. Elec Rev, N Y—May 18, 1907. No. 84415.

A Comparison of the Cost of Power as Generated by Different Types of Steam Engines. W. M. Wilson. An endeavor to determine the relative merits of different types of engines under different assumed conditions. 3500 w. Power—Jan., 1907. No. 81455 C.

Steam Power vs. Gas Power. D. L. Fagnan. Information relating to comparisons between costs of power from gas engines, and steam or electricity. 1000 w. Engr, U S A—June 1, 1907. No. 84781 C.

Comparative Costs of Gasoline, Gas, Steam, and Electricity for Small Powers. William O. Webber. Gives tables of itemized cost of 1 H. P. per hour on 2, 6, 10 and 20 H. P. plants respectively for gasoline, gas, steam, and electricity. 1200 w. Eng News—Aug. 15, 1907. No. 86388.

Relative Economy of Steam and Gas Power Where Exhaust Steam is Used for Heating. F. W. Ballard. Read before the Ohio Soc. of Mech., Elec., & Steam Engrs. A comparison showing that when the exhaust steam is utilized, steam is more economical. 3000 w. Eng News—Aug. 15, 1907. No. 86387.

Use of Exhaust Heat and Comparative Cost of Installation. L. G. Findlay. An investigation of the cost of steam and gas plants, and matters related. 1500 w. Engr, U S A—June 1, 1907. No. 84782 C.

Hydro-Electric Power versus Steam for Industrial Plants. H. von Schon. Gives a comparison of availability, efficiency and cost, and reviews the development of water power into electric energy. 5500 w. Engineering Magazine—April, 1907. No. 83312 B.

Hydro-Electric Power versus Steam for Industrial Plants. H. von Schon. This second article of a series discusses the development of water power as a commercial enterprise. 5000 w. Engineering Magazine—May, 1907. No. 83936 B.

Hydro-Electric Power versus Steam for Industrial Plants. H. von Schon. This

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third article of a series describes some typical modern stations, and calls attention to undeveloped powers in various parts of the United States. Ills. 7000 w. Engineering Magazine—June, 1907. No. 84193 B.

Hydro-Electric Power versus Steam for Industrial Plants. H. von Schon. The fourth and last article of a series. Outlines the professional equipment needed by an engineer expected to report on a hydro-electric project, and the essential features of the examination on which to base conclusions. 5000 w. Engineering Magazine—July, 1907. No. 85311 B.

Comparative Cost of Steam and Hydro-Electric Power. William O. Webber. A commentary and supplement to Mr. H. von Schon's discussion, giving cost data from actual experience with working installations. 1000 w. Engineering Magazine—Sept., 1907. No. 86608 B.

## Crane-Hooks.

An Experimental Investigation of the Maximum Stresses in Loaded Crane-Hooks. John Goodman. A comparison of old and new theories, giving data obtained by experiment upon wrought-iron crane-hooks. 3300 w. Inst of Civ Engrs—No. 3655. No. 84461 N.

## Cranes.

The Control of Cranes. E. G. Fiegehen. Discusses in their order the cycle of operations, with suggestions for skilful control. 2500 w. Prac Engr—April 12, 1907. No. 83866 A.

Modern Harbor Cranes. Brief illustrated descriptions of types built in Europe, and their methods of operation. 800 w. Elec Wld—Jan. 26, 1907. No. 81943.

Modern Dock and Harbor Cranes (Moderne Werft- und Hafenkrane). Bruno Müller. An illustrated description of the dock cranes exhibited at the Milan Exposition by the firm of Bechem and Keetman, Duisburg. 2000 w. Schiffbau—Aug. 14, 1907. No. 86955 D.

Machinery for Mercantile Ports (Attrezzatura dei Porti Mercantili). A. Gullini. Illustrated description of dock machinery, cranes, etc., exhibited at the Milan exposition, 1906. Serial. 1st part. 1600 w. Monit Tech—June 10, 1907. No. 85621 D.

Dock Equipment; Including the Relative Advantages of Electric and Hydraulic Appliances. W. W. Squire. Read at Engng. Con. of the Inst. of Civ. Engrs. Considers appliances for the handling of cargo. Discussion. 2700 w. Elect'n, Lond—June 21, 1907. No. 85391 A.

## POWER AND TRANSMISSION

Electric Transporters at Mersey Dock. Illustrations and brief description of transporters designed for the rapid handling of general cargo, and to run along the shed-roofs. 500 w. Engng—July 5, 1907. No. 85590 A.

Cranes for Shipbuilding Berths. Carlo Piaggio. Read before the Inst. of Naval Archts. Gives an illustrated description of the electric cranes at the Riva shipyard. 1000 w. Mech Engr—April 6, 1907. No. 83735 A.

A 60-Ton Barge Crane of Variable Range (Ponton-Bigue de 60 Tonnes, à Portée Variable). Ch. Dantin. Illustrated description of a crane in use on the Suez Canal. 2000 w. Génie Civil—Aug. 31, 1907. No. 86928 D.

Notes on Boat and Anchor Cranes. Drawings showing details of electrically operated cranes for handling boats and anchors on warships, representing practice of the past ten years. 1000 w. Int Marine Engng—Nov., 1907. Serial. 1st part. No. 87809 C.

150-Ton Derricking Crane at the Imperial German Naval Base, Kiautschau, China. Illustrated description of an interesting type of fixed hammer derricking crane, electrically operated. 1500 w. Prac Engr—Nov. 2, 1906. No. 80345 A.

A 150-Ton Giant Crane. Illustrated detailed description of a large crane for harbor work, built at British works, with some reference to German types. 2500 w. Engr, Lond—Feb. 1, 1907. No. 82260 A.

150-Ton Hydraulic Wharf-Crane at Elswick. Illustrations, with brief description of a crane for putting heavy loads on board ships. 300 w. Engng—Feb. 22, 1907. No. 82836 A.

150-Ton Hammer Derricking-Crane. Illustrates and describes a crane erected at Birkenhead, which is a modification of the hammer-head type. Electricity is used as the motive power. Plate. 2000 w. Engng—June 7, 1907. No. 85113 A.

Machinery of the 150-Ton Hammer-Head Crane at Clydebank. Illustrated detailed description of this electric crane at the shipbuilding yard at Clydebank. 2 plates. 3500 w. Engng—June 21, 1907. No. 85400 A.

Electrically-Driven Transportable Gantry Cranes of 4,000 KG. Lifting Power, with Patented Universal Discharging Device. Illustrated description of a crane for the Cologne-Deutz harbor. 1100 w. Prac Engr—Feb. 1, 1907. No. 82593 A.

A Comparison Between Hydraulic and Electric Cranes (Comparaison entre les Grues Hydrauliques et les Grues Elec-

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triques). R. Gasquet. Describes the mechanism of both types and compares their operation, with especial reference to their utility on docks. Ills. 4000 w. Serial. 1st part. Génie Civil—July 27, 1907. No. 86213 D.

Vertical vs. Horizontal Cranes: A Comparison. An investigation of the special advantages and applications of each. Ills. 1800 w. Prac Engr—July 12, 1907. No. 85855 A.

Electric Cranes at the Nuremberg 1906 Exposition (Die Bayerische Jubiläums-Landes-Ausstellung in Nürnberg 1906). A. Hundt. Description of jib and traveling cranes, with diagrams of the wiring. Illus. 1900 w. Elektrotech Zeitschr—Jan. 31, 1907. No. 82332 B.

Design and Construction of Electric Overhead Travelling Cranes. Read before the Grad. Assn. of the Inst. of Mech. Engrs. Considers only the multi-motor type with fixed gantry, giving illustrations. 2800 w. Mech Engr—March 23, 1907. No. 83414 A.

Electric Cranes. H. H. Boughton. Reviews the rapid development of electric cranes, stating their advantages, giving particulars of comparative tests of electric and hydraulic cranes. 3800 w. Elect'n, Lond—Sept. 6, 1907. Serial. 1st part. No. 87062 A.

Hoisting and Transport Devices in Steelworks and Rolling Mills (Hebe- und Transportmittel in Stahl- und Walzwerksbetrieben). G. Stauber. Gives elaborate illustrations and detail drawings of various types of molten-metal conveyors, cranes for handling ingots, etc. 25000 w. Stahl u Eisen—July 10, 1907. No. 86224 D.

Electrical Rolling Mill Transporters. Illustrates and describes electrically driven special transporting devices recently built in Austria. 1800 w. Engr, Lond—Oct. 18, 1907. No. 87965 A.

Overhead Travelling Revolving Foundry-Crane. Illustrated description of a new type of crane as regards the application and method of working, built in Nuremberg. 500 w. Engng—Jan. 25, 1907. No. 82155 A.

Formulas for Force Required to Move Crane Trolleys. John S. Myers. Briefly considers the conditions that should be taken into account and the values of factors in the calculations, developing formulae. 1000 w. Mach, N Y—Oct., 1907. No. 87471 C.

The Erection of an Over-head Traveller. E. G. Fiegehen. Describes the usual course of erection for a 10-ton hand-power traveller for a span of 40

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feet. Ills. 3000 w. Prac Engr—Dec. 14, 1906. No. 81235 A.

The Design of Under-Carriages for Jib Cranes. E. G. Fiegehen. The present article considers types of under-carriages, axles, and gearing. Ills. 2000 w. Prac Engr—Aug. 23, 1907. Serial. 1st part. No. 86716 A.

The Clark Freight Unloader. Illustrated description of a portable freight-unloading machine and its operation. 1200 w. Ir Age—Dec. 27, 1906. No. 81258.

Handling Equipment for Structural Plants. George P. Thomas. Illustrates and describes hoists, cranes and like machinery designed for this work. 2000 w. Ir Age—Jan. 24, 1907. No. 81765.

Special Handling Appliances for the Shop. H. M. Lane. Illustrates and describes the truck and crane systems of the B. F. Sturtevant Company, Hyde Park, Mass. 2200 w. Ir Age—April 4, 1907. No. 83433.

Electric Freight-Handling Cranes for the Panama Railway. Illustrated description of cranes for the La Boca pier of the Pacific terminal. Designed to operate in a narrow space and to provide for a tidal variation of 20 ft. 500 w. Eng News—July 25, 1907. No. 85886.

A Novel Lumbering Crane. Henry Hale. Illustrated description of the McGiffert loader, which can be utilized as a locomotive or stationary engine, for skidding logs and piling them for transportation. 1100 w. Sci Am Sup—June 15, 1907. No. 85017.

Special Derricks and Buckets for the Construction of a Reinforced-Concrete Warehouse at Chicago. Illustrated description of a steel derrick with 135-ft. mast and 85-ft. boom. Also a dumping bucket of special design. 1600 w. Eng News—July 25, 1907. No. 85884.

See also Quebec, under CIVIL ENGINEERING, BRIDGES; and Cranes, under MARINE AND NAVAL ENGINEERING.

## Electric Driving.

General Adaptation of Electric Motors to Manufacturing Plants. C. H. Darrall. Remarks on the advantages of electric driving, pointing out some valuable features of both the alternating current and direct current systems. 2800 w. Can Soc of Civ Engrs—Jan. 10, 1907. No. 82054 N.

Electric Motor Drive. George H. Schaeffer. A short comparison between belt-driven and motor-driven machinery, giving the advantages of the latter. 1000

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## POWER AND TRANSMISSION

## Electric Driving

w. Am Mach—Vol. 29. No. 44. No. 80173.

Electrical v. Mechanical Power in Mills. Abstract of a paper by A. Sterling. Considers briefly the main methods of distributing power in factories, their efficiency and cost. 1000 w. Elec Engr, Lond—Nov. 9, 1906. No. 80479 A.

Advantages and Applications of the Electric Drive. F. B. Crocker and M. Arendt. Portion of lecture notes from the Electrical Engineering Department of Columbia University, with illustrations of various applications. 1600 w. Sci Am Sup—March 2, 1907. No. 82647.

Power Required to Drive Individual Machine Tools. H. B. Emerson. Gives data gathered by the writer. 800 w. Am Mach—Vol. 30. No. 41. No. 87543.

Motors for Machines and Tools. Dana Pierce. A comparison of the electric drive with the steam drive or water drive by belting and shafting, considering the advantages of the use of electricity in mills and workshops. 2800 w. Ins Engng—March, 1907. No. 83587 C.

An Electrically-Driven Cycle Factory. Describes the electrical equipment of a factory in Birmingham, Eng., where sheet steel has entirely displaced castings, and the operations necessary for the transformation of blanks into the desired forms are carried out chiefly in presses; the process is explained. 1400 w. Engr, Lond—Jan. 11, 1907. Serial. 1st part. No. 81752 A.

A Model Electrical Machine Shop Equipment. F. M. Feiker. Illustrated description of new shops in Atlanta, Ga., showing the adaptation of the electric motor to machine-tool work. 2200 w. Elec Rev, N Y—Jan. 12, 1907. No. 81594.

Electrically-Driven Rolling Mills. Abstract of a paper by G. M. Brown, before the Rugby Engng. Soc. Discusses the application of electricity to the exacting work of driving main rolls, examining the mechanical features of the problem and the various methods by which electric driving has been made practically and commercially feasible. Ills. 3800 w. Elec Engr, Lond—Feb. 1, 1907. Serial. 1st part. No. 82243 A.

An Electrically Operated Structural Plant. Illustrated description of a plant for manufacturing ornamental and structural steel work for buildings and bridges. 1600 w. Eng Rec—May 4, 1907. No. 84224.

The Dunston-on-Tyne Flour Mill. Illustrated description of the electrical

working of a large flour mill. 2200 w. Elect'n, Lond—Jan. 4, 1907. No. 81642 A.

Electrical Equipment of the Bath Portland Cement Company, Bath, Pa. Illustrated description of the applications of induction motors in this plant. 2200 w. Elec Rev, N Y—Nov. 17, 1906. No. 80429.

Electricity for Cement Plants. J. B. Porter. Read before the Assn. of Am. Portland Cement Mfrs. Points out some of the special advantages of the electric drive in the manufacture of cement, both in economy and flexibility. 2500 w. Eng Rec—Sept. 21, 1907. No. 87152.

An Electrically Driven Cement Works. Illustrated description of works at West Hartlepool recently changed from oil-engines to three-phase induction motors. 2500 w. Elec Engr, Lond—May 17, 1907. No. 84573 A.

Electrical Equipment in Cement Plants. J. B. Porter. Points out the special advantages of the electric drive in the manufacture of cement both in economy and flexibility. 2500 w. Cement—Sept., 1907. No. 87401 C.

The Driving of Wood-Working Machines by Electricity. Presents the advantages of electric driving and gives information in regard to its application. Ills. 4000 w. Engr, Lond—June 7, 1907. No. 85118 A.

The Electric Driving of Paper Machines (Commande Electrique des Machines à Papier). M. Orban. Discusses the special difficulties in the way of applying electric power to the driving of paper machines, and the manner in which they have been overcome. Ills. 4000 w. Soc Belge d'Elec'ns—Sept., 1907. No. 87601 E.

Electrical Equipment of the West Virginia Pulp and Paper Company, Piedmont, W. Va. Illustrated description of the conversion of a plant from steam to electric power without interruption of service. 3500 w. Elec Wld—Feb. 9, 1907. No. 82197.

Breaking the Record in Newspaper Making. Day Allen Willey. Illustrated description of the new plant of the Baltimore Sun, which is electrically driven. 2000 w. Elec Rev, N Y—May 18, 1907. No. 84414.

Plant of the Manz Engraving Company. Illustrated description of a modern engraving and printing plant equipped with individual electric drive. 1500 w. Engr, U S A—Aug. 15, 1907. No. 86409 C.

The Electric Driving of Ring Spinning Machines. Enrico Bignami. An account of tests made by Messrs. Brown, Boveri & Co. and the results. Ills. 1500 w.

## MECHANICAL ENGINEERING

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Elec Rev, Lond—Aug. 23, 1907. No. 86720 A.

Electrically Operated Equatorial Mountings for Telescopes. Illustrates and describes the construction recently invented by Herr F. Meyer, in which electricity is the motive power used. 1200 w. Sci Am Sup—May 18, 1907. No. 84393.

See also Air Compressors, under POWER AND TRANSMISSION; Gearing, Lathes and Pattern Shops, under MACHINE WORKS AND FOUNDRIES; Cotton Mills and Paper Making, under MISCELLANY; and Shop Equipment, under ELECTRICAL ENGINEERING, DISTRIBUTION.

### Elevators.

The Growth and Development of the Elevator Industry. Charles H. Kloman. Reviews the rapid development of this industry, showing the changes through which it has passed, and the types to be installed in buildings of 40 stories or more. Ills. 2000 w. Cassier's Mag—Sept., 1907. No. 86613 B.

The Prevention of Elevator Accidents. Reginald Pelham Bolton. Deductions from a large group of accidents recently studied by the author as an expert, pointing out the specific causes and indicated preventives. Also discusses the present very unsatisfactory position of the accident companies and inspectors, and suggest a system of insurance which should really insure. 2500 w. Engineering Magazine—Dec., 1906. No. 80698 B.

Defective and Dangerous Features in Elevator Operation. Reginald Pelham Bolton. Calls attention to features needing correction to assure greater safety and improved service. 1500 w. Engineering Magazine—Feb., 1907. No. 81894 B.

The Comparative Capacity of Elevators and Escalators for Handling Crowds. Charles D. Seeberger. Concludes that the platform area per unit of time affords a perfect standard for comparison. 900 w. Eng News—May 2, 1907. No. 84043.

The Hydraulic Elevator. William Baxter, Jr. Discusses the fundamental principles of different types. 3000 w. Power—Dec., 1906. No. 81002 C.

The Hydraulic Elevator. William Baxter, Jr. Gives comparison of the "pushing" and "pulling" types of horizontal-cylinder machines, describing the general arrangements of low-pressure systems. Ills. 3000 w. Power—Feb., 1907. No. 82012 C.

A 40-Ton Hydraulic Coal Hoist. Illustrated description of a hoist for the new

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docks at Middlesbrough. 500 w. Engr, Lond—Jan. 4, 1907. No. 81661 A.

Tests of a Plunger Elevator Plant. Arthur J. Herschmann. Gives tables referring to the commercial tests made on the plunger elevator plant of the Trinity Building, New York City, while in regular operation. Ills. 1200 w. Pro Am Soc of Mech Engrs—Nov., 1906. No. 80528.

Test of a Plunger Elevator Plant. Discussion of paper by A. J. Herschmann. Ills. 6200 w. Pro Am Soc of Mech Engrs—Feb., 1907. No. 82504 F.

Electrically-Driven Hydraulic Lifts. Illustrated description of the Boddam system of combining the electrical drive with an existing hydraulic lift. 1200 w. Elec Engr, Lond—March 15, 1907. No. 83263 A.

Boddam's Hydro-Electric Lift. Illustrates and describes an arrangement having the advantages of the hydraulic lift and the electrically driven lift combined. 1000 w. Engng—May 17, 1907. No. 84580 A.

Electric v. Hydraulic Lifts. Percy Good. A criticism of statements in a recent pamphlet published by the London Hydraulic Power Co., dealing with the comparative safety, convenience, and economy of the two forms of lift-driving. 1500 w. Elec Rev, Lond—July 5, 1907. No. 85582 A.

Notes on Elevators. E. R. Carichoff. Discusses both hydraulic and electric elevators, their safety, economy, efficiency, etc. 2500 w. Elec Rev, N Y—Sept. 21, 1907. No. 87158.

Electric Elevators. William Baxter, Jr. Illustrates and describes the Cutler-Hammer elevator controller. 1200 w. Engr, U S A—Oct. 1, 1907. No. 87328 C.

A Positively Controlled, High-Speed Electric Elevator. Illustrates and describes a mechanism developed by Charles Richardson Pratt. 1200 w. Eng News—Sept. 26, 1907. No. 87251.

High-Pressure Elevator Equipment of the Metropolitan Life Insurance Building, New York. Illustrated detailed description of the elevator plant for an unusually large building and extensive elevator service. 3500 w. Eng Rec—March 23, 1907. No. 83212.

The Electric Elevator Equipment for a Tall Office Building. Illustrates and describes an installation to meet unusual conditions in an 18-story building at No. 1 Wall St., New York City. 1500 w. Eng Rec—Sept. 21, 1907. No. 87150.

High Speed Elevators. Charles R.

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## Elevators

Pratt. Describes the type of elevator selected for the new Singer building and the tower of the Metropolitan Life Insurance building in New York, both of which exceed 40 stories. Also short discussion by Orman B. Humphrey. 3000 w. Pro Am Soc of Mech Engrs—Oct., 1907. No. 87771.

The Elevator and Escalator Equipment of the New York Subway. Illustrated description of arrangements for handling large crowds, using the power from the subway. 2500 w. Eng Rec—July 20, 1907. No. 85790.

Elevators for Industrial Plants. E. R. Carichoff. Brief discussion of the electric, hydraulic and other systems of operation and means of meeting the requirements. 800 w. Elec Rev, N Y—Oct. 26, 1907. No. 87891.

Temporary Elevators for the Erection of the Singer Building Tower. Illustrated description of an electrically operated drum elevator with provisions for raising the headworks as needed. 1800 w. Eng Rec—Oct. 12, 1907. No. 87566.

## Friction Driving.

Apparatus for Clamping by Means of Friction (Rapport Sur des Appareils de Calage par Frottement). E. Sauvage. Illustrated description of various clutch and brake mechanisms designed by M. Rémondy, utilizing the friction of a wire wound around a cylinder. 1500 w. Bull Soc d'Encour—Aug., Sept., Oct., 1906. No. 80634 G.

Power Transmission by Friction Driving. W. F. M. Goss. An extension of an earlier study of the application of friction wheels to shaft driving. Ills. 6000 w. Pro Am Soc of Mech Engrs—Sept., 1907. No. 87430 C.

## Gearing.

See also same title and Speed Changing, under MACHINE WORKS AND FOUNDRIES.

## Hoists.

Colliery Hoists. F. Ernest Brackett. Gives results of an investigation made of the design and efficiency of winding engines. 3300 w. Eng & Min Jour—Nov. 3, 1906. No. 80252.

The Lidgerwood Electric Friction-Driven Winches for Car Ferries. Illustrated detailed description. 1700 w. Eng News—July 11, 1907. No. 85575.

## Lifting Magnets.

A New Line of Lifting Magnets for Use with Cranes. Illustrated description of new designs to meet requirements. 900

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w. Eng News—Sept. 26, 1907. No. 87248.

Lifting Magnets. Arthur C. Eastwood. An illustrated review of the development of lifting magnets, and matters relating to their use. 3000 w. Cassier's Mag—Dec., 1906. No. 80744 B.

## Lubricants.

The Purification of Lubricating Oil. James L. Grant. Illustrates various types of oil filters describing their working and showing the true economy of using good oil and filtering to purify and use again. 1500 w. Elec Wld—Dec. 1, 1906. Serial. 1st part. No. 80808.

The Selection of a Proper Lubricant. Roger B. Whitman. Information in regard to lubricants and methods of testing, with suggestions for the selection of an oil. 1600 w. Automobile—July 11, 1907. No. 85510.

The Properties and Use of Mineral Lubricating Oils. P. F. Walker. Considers methods of testing oils for their friction-reducing values, showing the need of investigating all phases of the oil question, especially the film-forming properties. 4000 w. Engineering Magazine—June, 1907. No. 84635 B.

Deflocculated Graphite and the "Acheson Effect." Orrin E. Dunlap. Describes a recent invention of E. G. Acheson which reduces graphite practically to the molecular state, stating some of its possibilities as a lubricant. 2000 w. Sci Am—May 11, 1907. No. 84326.

Deflocculated Graphite. Edward G. Acheson. Gives an account of experimental investigations, and results. 1200 w. Pro Am Inst of Elec Engrs—July, 1907. No. 86537 D.

A Convenient Means of Determining the Ash in Graphite. S. S. Sadtler. Describes the method used. 700 w. Jour Fr Inst—Sept., 1907. No. 87088 D.

See also Friction, under MEASUREMENT; and Lubrication, under STEAM ENGINEERING.

## Niagara.

Niagara Power at the Lackawanna Steel Plant. John C. Parker. Brief illustrated description of the installation for transforming and distributing this power in the West Seneca works, with discussion of certain features. 3500 w. Elec Jour—Jan., 1907. No. 81787.

Power Extensions at Niagara. Illustrates and describes the recent developments of the oldest power concern at Niagara—the Niagara Falls Hydraulic Power and Manufacturing Co. 1500 w. Engr, Lond—Jan. 4, 1907. No. 81657 A.

## MECHANICAL ENGINEERING

### Ore Unloaders

#### Ore Unloaders.

Hulett Ore Unloaders at Buffalo. Brief illustrated description of the latest installation of these machines, located on the docks of the Pennsylvania railroad. 500 w. Ir Trd Rev—Nov. 15, 1906. No. 80396.

Recent Types of Grab Buckets for the Handling of Heavy Material (Types Récents de Benne-Griffes pour la Manutention des Matières Pondéreuses). Illustrated description of several types especially adapted for loading and discharging ships. 2000 w. Génie Civil—May 25, 1907. No. 84911 D.

### Power Plants.

The Planning and Construction of the Power Plant. A. E. Dixon. The fourth number of this series is devoted to the water supply of the plant and its heating and purification. 4500 w. Engineering Magazine—Dec., 1906. No. 80696 B.

The Planning and Construction of the Power Plant. A. E. Dixon. An illustrated review of the leading types of main and auxiliary machinery, with the advantages and disadvantages peculiar to each. 3500 w. Engineering Magazine—Jan., 1907. No. 81194 B.

The Planning and Construction of the Power Plant. A. E. Dixon. The seventh article of this series deals with gas engines and gas generators and their applications to large installations. Ills. 3000 w. Engineering Magazine—Feb., 1907. No. 81892 B.

The Planning and Construction of the Power Plant. A. E. Dixon. This seventh, and last, article of Mr. Dixon's series deals with the design and arrangement of the central station building, giving illustrations of recent work. 3800 w. Engineering Magazine—March, 1907. No. 82634 B.

Power Plant of the American Museum of Natural History, New York. Illustrated detailed description of a plant of unusual interest, which will also be susceptible of utilization for exhibition purposes. 2500 w. Eng Rec—Jan. 19, 1907. No. 81721.

The Central Power Plant at St. Paul's School, Concord, N. H. Plans and description of a plant to furnish heat and light to a group of about 25 buildings. 2800 w. Eng Rec—April 6, 1907. No. 83483.

The Power Plant of the Metropolitan Life Building, New York. Illustrates and describes a new plant designed to furnish heat, light, and power for use of the largest office-buildings in the world.

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### Power Plants

There is a boiler plant of nearly 2,300 h.-p., an electrical equipment of 1,100 k. w. capacity, the machinery for 44 high-pressure elevators, and heating, ventilating, and other auxiliary apparatus. Illus. 4000 w. Eng Rec—Jan. 26, 1907. No. 81949.

A Model Plant in a Fine Office Building. Illustrated description of the plant for heating and electric light, motors being supplied for driving elevator pumps, printing presses, and ventilation fans, for the building of the Security Mutual Life Insurance Co., at Binghamton, N. Y. 3000 w. Engr, U S A—May 1, 1907. No. 84035 C.

Power Plant Equipment of the Boston Store. Illustrates and describes the machinery for furnishing light, heat and power in the Charles Netcher building in Chicago, Ill. 2000 w. Engr, U S A—June 15, 1907. No. 85088 C.

Engineering Features of the New Altman Department Store Building, New York. Brief description of the features which furnish power for elevators, lighting, bells, and all requirements of this large modern dry-goods business. 1600 w. Elec Wld—Nov. 3, 1906. No. 80256.

The Power Plant of the Cleveland, O., Arcade. H. W. Woodward. Illustrates and describes modern ways of getting best efficiency in a plant where compactness was imposed by severe conditions. 3300 w. Engr, U S A—June 1, 1907. No. 84780 C.

Power Plant of the West Street Building, New York City. Illustrated detailed description of the mechanical plant installed in a 23-story, steel-cage office building, on the Hudson River front. 4500 w. Eng Rec—July 27, 1907. No. 85946.

The United States Bureau of Engraving and Printing. Charles A. Blatchley. An illustrated detailed description of its power plant and mechanical equipment. 4500 w. Ir Age—Jan. 3, 1907. No. 81366.

Power Plant of the Kingsland Shops of the Delaware, Lackawanna & Western R. R. Illustrated detailed description of the power house, coal and ash handling systems, and underground smoke flue construction, the steam generating, electrical, and air compressor equipment, etc. 7000 w. Eng Rec—Jan. 5, 1907. No. 81492.

The Steam Plant of the Wood Worsted Mill. Illustrated detailed description of a plant for a very large textile mill in Massachusetts, discussing the relation of heat used for power production to that used for heating and mill processes. 4000 w. Power—Feb., 1907. No. 82010 C.

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Ravenna Plant of the Cleveland Mills Co. Illustrated description of a plant that supplies electric power for lighting and for driving machinery, and steam for various uses connected with the manufacture of worsteds. 2500 w. Engr, U S A—March 1, 1907. No. 82741 C.

Power Plant of the Quintard Iron Works Company of New York City. Illustrated detailed description of the power plant for shops manufacturing heavy and light machine work, engines, boilers, large condensers, pumps, etc., etc. Electric power, steam and compressed air are used. 5000 w. Elec Rec, N Y—March 16, 1907. No. 83064.

The Electric Plant at the Burbacher Hutte. Illustrated description of the electrical equipment of these German steel works. 1200 w. Engr, Lond—May 17, 1907. No. 84587 A.

The Power Plant of the Elgin National Watch Works. An illustrated description of a new power plant to supply a group of factory buildings. 3000 w. Eng Rec—Sept. 14, 1907. No. 87028.

Power Plants for Private Commercial Establishments (Grossstädtische Kraftwerke für Privatbetriebe). E. Josse. Description of some large independent plants for factories in Germany. Ills. Serial. 3 parts. 11000 w. Zeitschrift des Vereines Deutscher Ingenieure—Feb. 16 and 23, and March 2, 1907. No. 82928 each D.

Power Plant of the Santa Fe Grain Elevator. Illustrations and brief description of this Chicago plant and the large machinery installation to give great handling capacity. 2000 w. Engr, U S A—April 15, 1907. No. 83776 C.

Power Plant of the Sperry Flour Co., Los Angeles, Cal. W. F. Durand. States the conditions under which the plant must operate, and gives a detailed description of the plant installed, and test results. 3000 w. Eng Rec—March 30, 1907. No. 83367.

Test of Power Plant of Home Gas Company, Redlands, California. W. F. Durand. An illustrated description of the plant, with a discussion of the acceptance test made by the writer. 3500 w. Engr, U S A—Sept. 2, 1907. No. 86707 C.

Failures of Power-Generating Plant. Editorial review of the report of Michael Longridge, for 1906, on the casualties of steam engines, gas and oil engines, and electrical machinery. 2000 w. Engng—Aug. 30, 1907. No. 86871 A.

See also Costs, under POWER AND TRANSMISSION; Plants, under HEATING AND COOLING; Gas Power Plants, under COMBUSTION MOTORS; and Isolated Plants,

## POWER AND TRANSMISSION

under ELECTRICAL ENGINEERING, GENERATING STATIONS.

### Pulleys.

Single Pulley Drives. William F. Groene. Presents the advantages possessed by the single pulley drive, and also the disadvantages, and discusses the requirements of the ideal drive, and compares the merits of proposed designs. 1700 w. Mach, N Y—Dec., 1906. No. 80783 C.

### Rope Driving.

Rope Drives—Various Methods of Arranging Ropes on the Sheaves. R. Hoyt. Different systems are briefly discussed. 1200 w. Power—Jan., 1907. No. 81458 C.

Horsepower Transmissible by Manila Ropes. Frank Wackermann. Gives a table of horsepower transmitted by manila ropes, considering the effects of centrifugal force, so that the tension is constant at all speeds, and the tension on the slack side. 1000 w. Ir Age—Jan. 17, 1907. No. 81664.

Investigations of Belt and Rope Driving (Versuche mit Riemen und Seiltrieben). Herr Kammerer. Describes the specially constructed machine on which the tests were made, the tests themselves, and the results. Ills. 7000 w. Zeitschr d Ver Deutscher Ing—July 13, 1907. No. 86271 D.

Power in Rubber Manufacture. Illustrates and describes a novel application of rope transmission in a Detroit plant. Describes the work carried out, and the equipment. 3300 w. Engr, U S A—Nov. 1, 1906. No. 80200 C.

A Novel Drive for a Grinding Machine. H. F. Noyes. Illustrated description of a rope drive arranged in an interesting manner for operating the emery wheel of a grinding machine with long bed. 600 w. Am Mach—Vol. 30, No. 17. No. 83904.

See also Belts, under POWER AND TRANSMISSION.

### Ropes.

The Splicing of Fibrous Ropes. V. C. Vance. Instructions, with illustrations. 1200 w. Engr, U S A—March 15, 1907. No. 83093 C.

### Shaft Hangers.

Attaching Fixtures to Concrete. L. P. Alford. Illustrates and describes devices worked out for a plant at Beverly, Mass. 1800 w. Am Mach—Vol. 30, No. 11. No. 83012.

### Storage Batteries.

Hints on the Practical Management of the Storage Battery—Precautions Nec-

## MECHANICAL ENGINEERING

### Tidal Power

sary in Charging and Discharging End Cells. William Kavanagh. Information, with illustrations. 1400 w. Power—March, 1907. No. 82658 C.

Storage Battery Economy in Railway Power Plants. Arthur C. Scott. Discusses the conditions warranting the installation of a battery. Ills. 1800 w. Engr, U S A—March 1, 1907. No. 82742 C.

### Tidal Power.

The Use of Tidal Power for Compressing Air at Rockland, Me. William O. Webber. Brief account of this scheme, which is an improved Frizell method for compressing air by tidal power. 600 w. Eng News—Dec. 6. 1906. No. 80844.

### Turbo-Compressors.

Centrifugal Air Compressor (Turbokompressor, Bauart Rateau und Armengaud). Alfred Barbezat. Description of high speed centrifugal air compressor. Illus. 3000 w. Zeitschrift für das Gesamte Turbinenwesen—Dec. 29, 1906. No. 81846 D.

Turbo-Compressor, on the Rateau and Armengaud System (Turbo-Compresseur. Systeme Rateau et Armengaud). Alfred Barbezat. Illustrated description of steam-turbine driven centrifugal air compressor, for supplying air to a gasoline turbine, built at Brown, Boveri & Co.'s works. Diagrams. 2000 w. Schweiz Bauzeitung—Nov. 17, 1906. No. 81103 B.

Rateau's Turbo-Compressor. Illustrated description of this device, invented

### STEAM ENGINEERING

### Boiler Fittings

by Auguste Rateau, explaining the arrangement and its advantages. 1100 w. Mech Engr—Nov. 24, 1906. No. 80825 A.

The Efficiency of Centrifugal Ventilators and Pumps (Die Wirkungsgrade von Ventilatoren und Zentrifugalpumpen). L. Schütt. Theoretical discussion, with confirmatory experiments on centrifugal ventilating fans. Formulae, curves and tables. 2000 w. Zeitschr d Ver Deutscher Ing—Oct. 20, 1906. No. 80603 D.

Measuring the Efficiency of Turbine Air-Compressors. Discusses a point raised in a letter from Mr. Frank Foster, as to how far it is legitimate to deduce the hydraulic efficiency from the degree by which the final temperature exceeds that due to adiabatic compression. 1000 w. Engng—Nov. 16, 1906. No. 80727 A.

High-Pressure Centrifugal Blowers (Ventilateurs Centrifuges à Haute Pression). A. Rateau. Illustrates and describes various types of turbo-compressor, comparing them with piston machines, and discussing their advantages. 10000 w. Rev d Métal—Aug., 1907. No. 86913 E + F.

High-Pressure Centrifugal Blowers (Kreiselgebläse für Hohen Druck). A. Rateau. An illustrated description of their development and of various types and installations. 7000 w. Zeitschr d Ver Deutscher Ing—Aug. 17, 1907. No. 86984 D.

See also Gas Turbines, under COMBUSTION MOTORS.

## STEAM ENGINEERING

### Blowoff Tank.

Concerning Blowoff Tanks. Explains the necessity for such tanks in cities, and illustrates and describes a correct form of construction. 2000 w. Locomotive—Oct., 1906. No. 80220.

### Boiler Explosions.

The Cradley Heath Boiler Explosion. A report of the investigation of the fatal boiler explosion on July 4, 1906, giving illustrations showing the effect. 10000 w. Engng—Dec. 14, 1906. No. 81251 A.

The Lap Joint in Boilers. H. S. Brown. Discusses whether lap joints are responsible for boiler explosions. Explains the weak points of lap joints, but states that many troubles have been charged to them for which they are not responsible. Ills. 3500 w. Ir Age—April 18, 1907. No. 83757.

Boiler Explosions. Editorial discussion of causes. Maltreatment and ignorance, bad design, neglect, overheating, deterioration, etc., are considered. 4500 w. R R Gaz—June 7, 1907. No. 84800.

Keir Explosion at Maypole. A report of the investigation of a boiler explosion on Feb. 18, 1907, at the Agricultural Implement Works of A. Jack & Sons, Ltd. 2200 w. Engng—July 26, 1907. No. 86186 A.

Three Notable Boiler Explosions. Illustrated account of the explosion on the steamer "City of Trenton"; the explosion that destroyed a power plant at Marion, Ohio; and the explosion at the St. Joseph's Orphan Asylum, Philadelphia. 1000 w. Locomotive—July, 1907. No. 87093.

### Boiler Fittings.

Boiler Auxiliaries. Illustrates and de-

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## Boiler Fittings

scribes safety devices and regulators, considering their care. 6000 w. Engr, U S A—Jan. 1, 1907. No. 81428 C.

The Regulation of Boiler Feeders. Charles S. Towne. Illustrates several applications of regulators to boilers, and discusses when it will pay to install them. 2000 w. Elec Wld—March 2, 1907. Serial. 1st part. No. 82778.

See also Injectors, under STEAM ENGINEERING.

## Boiler Furnaces.

Fuel Economy in Boiler Furnaces at Cripple Creek. J. Elmer Parkison. Illustrated description of a lignite burner recently introduced. It embodies the application of the gas-producer principle to boiler practice. 800 w. Min Rept—Nov. 22, 1906. No. 80596.

The Balanced Draft Gas Producer Furnace as Applied to Steam Boilers. Embury M'Lean. Read before the Brooklyn Engrs. Club. Illustrates and describes this apparatus for producing perfect combustion of fuel under boilers in any furnace. 1200 w. Boiler Maker—Nov., 1906. Serial. 1st part. No. 80388.

Cylindrical Boiler Furnaces. Illustrated review of the development of the modern suspension furnace and the methods of manufacture. 2500 w. Boiler Maker—Oct., 1907. No. 87322.

Special Furnaces and Grates. Illustrated descriptions of several special systems are given, and of some refractory materials for furnace linings. 7500 w. Engr, U S A—Jan. 1, 1907. No. 81431 C.

Proportions and Details of Furnaces and Grates. Explains the chemical process of combustion, calorimeters, smoke consuming devices, etc. Ills. 3000 w. Engr, U S A—Jan. 1, 1907. No. 81430 C.

The Lining of Steam Boiler Furnaces. William Kavanagh. Suggestions of importance in securing economical operation of the plant. 1000 w. Elec Wld—Sept. 7, 1907. No. 86848.

See also Fuels and Natural Draft, under STEAM ENGINEERING.

## Boiler House.

The North Boiler House of Swift & Co. in the Union Stock Yards, Chicago. Illustrated description of a new boiler house having a capacity of 5600 h. p., and its equipment. 4800 w. Eng Rec—April 6, 1907. No. 83480.

Boiler-Room Design and Equipment. William H. Bryan. An illustrated article discussing in detail the present trend of practice and the controlling ideas which

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## Boiler Management

should govern the design. 2500 w. Cassier's Mag—Sept., 1907. No. 86619 B.

## Boiler Inspection.

Rules for Boiler Inspection. Formulated by the Massachusetts Board of Boiler Rules. 3000 w. Boiler Maker—Nov., 1907. No. 87999.

## Boiler Management.

The Economical Generation and Use of Steam. The present articles considers the economy possible in the generation of the steam. 2500 w. Prac Engr—April 12, 1907. Serial. 1st part. No. 83867 A.

Fuel Economy. H. B. Maxwell. Remarks on points to be considered to secure economy with a modern steam plant. 1500 w. Elect'n, Lond—Dec. 28, 1906. No. 81531 A.

Care and Management of Boilers. I. Deterioration of Boilers. E. S. Hawkins. Considers corrosion, overheating, scale, grooving, etc. II. Routine of the Boiler Room. A. J. Albright. Discusses methods of caring for, cleaning, repairing, firing, and operating boilers. 6200 w. Engr, U S A—Jan. 1, 1907. No. 81436 C.

Boiler, Engine and Generator Testing and Management. Charles L. Hubbard. The present number considers the management of steam boilers. 3000 w. Elec Rev, N Y—July 13, 1907. Serial. 1st part. No. 85532.

Fuel Losses in Steam Power Plants. George H. Barrus. Discusses the more important losses as indicated by actual tests and examinations. 4500 w. Cassier's Mag—Aug., 1907. No. 86008 B.

Boiler Plant Economy. C. H. Hurd. Discusses the advantage of a system of records, the choice of fuels, boiler room methods, etc. 3000 w. Pro Am Water Wks Assn—1906. No. 85814 N.

Boiler Room Economy. Eugene L. Griggs. Suggestions concerning the use of cheap fuel, good firing and various other points that tend to reduce the coal bill. 1000 w. Elec Wld—Nov. 2, 1906. No. 80258.

Boiler Room Economies. James Smith. This subject is discussed in connection with central-station operation, considering briefly fuel analysis, fuel gas analysis, auxiliary apparatus, feed water, firing, superheating, load factor and radiation. 1200 w. Elec Wld—Oct. 5, 1907. No. 87489.

Efficiency in the Burning of Fuel Under the Steam Boiler. William D. Ennis. This first article of a series deals with the influence of air supply upon economy of combustion, the means of discovering whether the conditions are right in any



# MECHANICAL ENGINEERING

## Boiler Management

## STEAM ENGINEERING

## Boilers

given plant, and the remedies needed. 5500 w. *Engineering Magazine*—June, 1907. No. 84179 B.

Efficiency in the Burning of Fuel Under the Steam Boiler. William D. Ennis. This second article of a series discusses the regulation and control of furnace draft. Ills. 2000 w. *Engineering Magazine*—July, 1907. No. 85309 B.

Efficiency in the Burning of Fuel Under the Steam Boiler. William D. Ennis. This third article of a series considers the modifications of draft required by commercial fuels. 3000 w. *Engineering Magazine*—Aug., 1907. No. 85917 B.

See also Flue Gases, Fuels, Smoke Prevention and Stoking, under STEAM ENGINEERING.

### Boiler Plates.

The Resistance of the Flat Walls of Steam Boilers and Other Steam Holders zur Widerstandsfähigkeit Ebener Wandungen von Dampfkesseln und Dampfgefäßen). C. Bach. Theoretical discussion of the strength of flat plates of various shapes. Ill. 2500 w. *Zeitschr d Ver Deutscher Ing*—Dec. 1, 1906. No. 81150 D.

The Rupture of Boiler Plates (Zur Frage der Rissbildung in Kesselblechen). Suggests improvements in materials, processes of manufacture, and methods of testing, illustrating their necessity and utility from actual examples of failure. Ills. 3500 w. *Stahl u Eisen*—July 3, 1907. No. 86225 D.

The Formation of Cracks due to Expansion (Wärmespannungen und Rissbildungen). Carl Sulzer. Considers ruptures of engine cylinders due to unequal heating, the cracks developed in riveting boiler plates, etc. Ills. 3500 w. *Zeitschr d Ver Deutscher Ing*—July 27, 1907. No. 86255 D.

### Boilers.

Generation of Steam. An illustrated article considering the principles governing the application of heat to the evaporation of water, and related matters. 2000 w. *Engr, U S A*—Jan. 1, 1907. No. 81422 C.

Classification of Boilers. Illustrates and describes various constructions and types, stating the advantages of each. 3000 w. *Engr, U S A*—Jan. 1, 1907. No. 81423 C.

Power of Boilers. Considers the meaning of power in relation to boilers, the horse-power rating, rate of evaporation for a given power, etc. 3000 w. *Engr, U S A*—Jan. 1, 1907. No. 81424 C.

Principles of the Steam Boiler. Judson H. Boughton. Explains the purpose of the boiler, the properties of steam, and the energy handled. 1500 w. *Engr, U S A*—Jan. 1, 1907. No. 81421 C.

Steam Boilers. Traces the evolution of heat and its influence on the heating surfaces. 900 w. *Prac Engr*—July 12, 1907. Serial. 1st part. No. 85856 A.

A Comparison of Boiler Types. M. T. Goss. Discusses the best type of boiler for efficiency and maintenance, aiming to give suggestions to develop steam power for less cost. 2200 w. *Min Rept*—Feb. 21, 1907. No. 82563.

Details of Boiler Construction. Discusses the materials suitable for use, form, proportion and arrangement of parts. 8000 w. *Engr, U S A*—Jan. 1, 1907. No. 81425 C.

Steam Boilers. Angus Sinclair. From "Development of the Locomotive Engine." States the principal requisites of a well-designed boiler, considering briefly various forms, and the modern firebox. 1600 w. *Ry & Loc Engng*—Feb., 1907. No. 82125 C.

Water-Tube Boilers. Brief illustrated descriptions of many types. 17000 w. *Engr, U S A*—Jan. 1, 1907. No. 81426 C.

Watching a Boiler at Work—An Account of Experiments with a Glass Model of a Water-tube Boiler. C. Hill Smith. Ill. 2300 w. *Power*—April, 1907. No. 83246 C.

The Piping and Fittings for a Tubular Boiler. F. C. Douglas Wilkes. Methods of determining the size of the steam opening, the safety valve, etc., are considered in the present article. Ills. 1800 w. *Boiler Maker*—Aug., 1907. Serial, 1st part. No. 86042.

An English Boiler Improvement. Illustrates and describes the Temperley-Cockburn system of steam extraction and progressive heating in water-tube boilers. 2300 w. *Ir Age*—Sept. 19, 1907. No. 87101.

The Temperley-Cockburn Boiler. Illustrates and describes a new system of working water-tube boilers, which aims to secure additional output and efficiency. 3000 w. *Engng*—Feb. 8, 1907. No. 82467 A.

Temperley-Cockburn System of Steam Extraction for Water-Tube Boilers. Illustrated description, with report of trials made with boilers of the Belleville type. 2500 w. *Mech Engr*—March 2, 1907. No. 82888 A.

Boiler Mountings for a Scotch Boiler. J. Q. Walton. Discusses good and bad

# MECHANICAL ENGINEERING

## Boilers

## STEAM ENGINEERING

## Boiler Tubes

arrangements, the location of valves, etc. 3000 w. Boiler Maker—Dec., 1906. No. 80814.

Proportions of Scotch Boilers. Carl H. Clark. Information concerning the proper size and design of a boiler for any given purpose. 1400 w. Boiler Maker—Jan., 1907. No. 81352.

Specifications for a Three-Furnace Single-Ended Scotch Boiler. Gives a typical set of specifications representing the best marine boiler construction at the present time. Ills. 4500 w. Boiler Maker—Feb., 1907. No. 82128.

Special Types of Fire-Tube Boilers. Brief illustrated descriptions of many types. 2000 w. Engr, U S A—Jan. 1, 1907. No. 81427 C.

Settings for Boilers. Illustrates and describes forms of settings, methods of support, and amounts of materials needed. 2000 w. Engr, U S A—Jan. 1, 1907. No. 81429 C.

Boiler and Setting. A. Bement. Illustrates and describes an improved design for use with bituminous coal—the tile roof furnace, said to secure smokeless combustion. 1200 w. Pro Am Soc of Mech Engrs—Nov., 1906. No. 80522.

Boiler and Setting. Discussion of paper by A. Bement on this subject. 4500 w. Pro Am Soc of Mech Engrs—Feb., 1907. No. 82505 F.

Testing Boilers. Methods of finding efficiency, horse-power and evaporation per pound of coal. Ills. 2000 w. Engr, U S A—Feb. 15, 1907. No. 82434 C.

Efficiency in Steam-Boiler Practice. Percival Cooke. Treats of the efficient performance of steam boilers from the position of the manufacturer. Ills. 4500 w. Cassier's Mag—May, 1907. Serial. 1st part. No. 84052 B.

Boiler Efficiencies. Editorial on the experiments now being conducted by the boiler division of the United States Geological Survey fuel-testing plant at St. Louis, Mo. 800 w. R R Gaz—July 12, 1907. No. 85513.

Capacities of Cast-Iron Sectional Boilers. Kenneth Gray. Read before the Inst. of Heat. & Vent. Engrs. An examination of things affecting boiler capacity, discussing also its efficiency and working qualities. 3000 w. Archt, Lond—June 28, 1907. No. 85489 A.

Some Notes on Boiler Defects and Failures. W. H. Fowler. Notes on patches and patching, lap fractures, screwed stud stays, etc. Ills. 1800 w. Mech Engr—Nov. 3, 1906. No. 80348 A.

Automatic Counter-Current and Water-

Circulating Device for Fire and Water-Tube Boilers (Selbsttätiger Gegenstrom- und Wasserrumlauf-Erzeuger von Kunert für Flamm- und Heizrohrkessel). Herr Förster. Illustrated detailed description of the device and results of elaborate tests of its efficiency. 4500 w. Zeitschr d Ver Deutscher Ing—April 27, 1907. No. 84146 D.

Arch Tubes and Brick Arches. G. W. Bennett. Gives results of a recent test made with a wide fire-box type of boiler to ascertain the efficiency of the brick arch and arch tubes, describing the test. 2000 w. Boiler Maker—July, 1907. No. 85358.

Boilers for Colliery Purposes. F. C. Swallow. Abstract of a paper read before the S. Staffordshire and Warwickshire Inst. of Min. Engrs. considering the type of boilers best suited for colliery purposes. 2500 w. Col Guard—Dec. 14, 1906. No. 81244 A.

Boiler Installation at the Nuremberg 1906 Exposition. (Die Dampfkesselanlage in der Bayerischen Jubiläums Landesausstellung Nürnberg 1906). J. Schmidt. Detailed description of boiler plant. Illus. Serial. 2 parts. 5900 w. Elektrotechnik und Maschinenbau—Nov. 18 and 25, 1906. No. 81819 each D.

Boilers in London Electric Stations (Die Dampfkessel in den Elektrizitätswerken Londons). R. Lind. Enumeration and description of different kinds and sizes of boiler in use. Illus. 5200 w. Zeitschr d Vereines Deutscher Ingenieure—Jan. 12, 1907. No. 82358 D.

Waste Heat Boilers for Copper Smelting Furnaces. Plan and description of an interesting installation at a smelting plant at Butte, Montana, for the utilization of waste heat. 1200 w. Eng Rec—July 6, 1907. No. 85457.

Novelties in Steam Boilers (Neuerungen auf dem Gebiete des Dampfkesselwesens). Illustrates and describes various recent types of boilers, superheating devices, mechanical stokers, etc. 7000 w. Glückauf—Sept. 7, 1907. No. 87624 D.

See also Turbine Testing, under STEAM ENGINEERING; and Boilers, under MARINE AND NAVAL ENGINEERING.

## Boiler Tubes.

The Deformation of Fire Tubes of Boilers Under External Pressure (Die Abweichung von der Kreisrunden Form bei Flammrohren mit Aeusserem Druck). O. Knaut. An illustrated description of the deformation and failure of round corrugated boiler tubes. 3000 w. Zeitschr d Ver Deutscher Ing—Nov. 3, 1906. No. 80608 D.

# MECHANICAL ENGINEERING

## Boiler Waters

## STEAM ENGINEERING

## Clearance

**Resistance of Tubes to Collapse.** Albert P. Carman and Maurice L. Carr. Describes a series of experiments made on the resistance of metal tubes of boiler-tube size and less, when subjected to external hydraulic pressure. 2500 w. *Am Mach*—Vol. 29 No. 50. No. 80956.

## Boiler Waters.

**Effect of Water on the Life of Boilers.** A. S. Atkinson. Discusses the effect of feed-water, loss of efficiency due to scale, the effect of sulphuric acid and acid iron salts, and methods of removing dangerous elements from the feed water before it enters the boiler. 2200 w. *Boiler Maker*—March, 1907. No. 82677.

**The Heat Transmission Loss Due to Boiler Scale and Its Relation to Scale Thickness.** Gives data and results of tests made at the Engineering Experiment Station of the College of Engineering of the University of Illinois. Also general discussion. Ills. 15500 w. *Pro W Ry Club*—March 19, 1907. No. 83753 C.

**Oily Waters and Their Treatment.** Albert A. Cary. Considers methods of separating oil from the steam and from the water of condensation. Ills. 3000 w. *Heat & Vent Mag*—Jan., 1907. No. 81795.

**How to Judge Boiler Waters from Analyses.** John G. A. Rhodin. Outlines how to draw conclusions from simple water analysis, illustrating by actual examples. 3000 w. *Engr, Lond*—May 31, 1907. No. 84895 A.

**Boiler Feed-Piping.** R. T. Strohm. Considers feed-water systems and matters relating to them. Ills. 2000 w. *Elec Wld*—Feb. 2, 1907. No. 82133.

**Boiler Feeding.** R. T. Strohm. Considers the methods of introducing feed water into steam boilers and their merits. 2000 w. *Elec Wld*—Dec. 1, 1906. No. 80809.

**The Purification of Boiler Feed Water.** Louis Waefelaer. Considers methods of treatment and apparatus used, testing, care, etc. Ills. 7000 w. *Jour S African Assn of Engrs*—Sept., 1907. No. 87950 F.

**How Should the Feed Water Be Heated?** A. J. Albright. A discussion of the best known methods; and formula for calculating the saving by heating with exhaust steam. 2800 w. *Power*—July, 1907. No. 85348 C.

**Graphical Calculation of Feed-Water Heaters.** N. A. Carle. Gives a chart plotted from straight-line formula, and one from Poole's logarithmic formula with examples of their application. 1500 w. *Power*—Dec., 1906. No. 80999 C.

**Heat Transmission in the Heating Sur-**

**faces of Feed-Water Heaters** (*Der Wärmeübergang an Vorwärmerheizflächen*). Paul Fuchs. Gives results of elaborate tests. 3000 w. *Zeitschr d Ver Deutscher Ing*—July 13, 1907. No. 86273 D.

**Some Experiences in Softening Water.** W. C. McCracken. Gives details of a trial of the process and modifications adopted at the Ohio State University. 2500 w. *Engr, U S A*—Dec. 15, 1906. No. 81051 C.

**The Mechanical Clarification and Filtration in Water Purifiers** (*Die Mechanische Klärung und Filterung in Wasserreinigern*). Walter Rottmann. Illustrated description of various kinds of water purifying apparatus. 2000 w. *Zeitschr d Ver Deutscher Ing*—Dec. 1, 1906. No. 81152 D.

**The Paterson Oil Eliminator and Water-Softener.** Illustrates and describes this apparatus for effecting the complete extraction of oil from feed-water by chemical means, as well as softening the make-up water when necessary. 2200 w. *Engng*—Dec. 21, 1906. No. 81342 A.

**Notes on Water Softening.** W. D. Collins. Read before the Indiana Engng. Soc. Gives results of experimenting with different methods, explaining the methods of determining the constituents. 2500 w. *Eng Rec*—Feb. 16, 1907. No. 82412.

**The Present Status of the Art of Water Softening.** Explains why hard water is unsatisfactory in the industries, and the principles of water softening and its practice, illustrating many plants. 4800 w. *Cassier's Mag*—March, 1907. No. 83030 B.

**A Commonplace View of Water-Softening.** E. J. Deason. Discusses water and its impurities in connection with steam engineering, and plants and processes for their removal. 3000 w. *Ir & Coal Trds Rev*—May 24, 1907. No. 84763 A.

**Commercial Water Softening and Purification.** Charles M. Hampson. From *Pro. Colo. Sci. Soc.* Reviews briefly successful processes for purifying and softening water and shows the saving made by purifying feed water before it enters the boilers. 2000 w. *Min Rept*—June 6, 1907. No. 84860.

See also Analysis, under CIVIL ENGINEERING; WATER SUPPLY.

## Clearance.

**Clearance and Receiver Drop in the Design of Compound Engines.** P. F. Walker. Outlines a rational method of dealing directly with the quantities mentioned. 2300 w. *Int Marine Engng*—Dec., 1906. No. 80560 C.

**The Compression of Steam in the Clear-**

# MECHANICAL ENGINEERING

## Condensers

ance Space of Engines (Expériences sur la Compression de la Vapeur dans l'Espace Nuisible des Machines à Vapeur). J. Boulvin. Gives the results of elaborate experiments on a single-cylinder, non-condensing engine using saturated steam. Ills. 10000 w. *Rev de Mécan*—Feb. 28, 1907. No. 82973 E + F.

## Condensers.

Condensers for Steam Engines and Turbines. Frank Foster. Abstract of a paper read before the Owens College Engng. Soc., Oct., 1905. Discusses the best vacuum for turbines and reciprocating engines, cost of condensing plant, and the power required by the auxiliaries. 3500 w. *Power*—Dec., 1906. No. 81005 C.

The Barometric Condenser. An explanation of its principles and of where the energy comes from, with illustrated descriptions of simpler types. 3300 w. *Power*—Jan., 1907. Serial. 1st part. No. 81453 C.

Condenser Piping for Steam Turbines (Zentralkondensationen zum Anschluss von Dampfturbinen). Herr Stach. Ills. 3800 w. *Glückauf*—Dec. 22, 1906. No. 82321 D.

Condensers and Condensing Plants. Illustrates and describes types of jet condensers and of surface condensing plants. 2200 w. *Mech Engr*—March 9, 1907. Serial. 1st part. No. 83106 A.

Latest Development in Condensing Plants. S. Zylberlast. Reviews the development of condensing plants from the time of their first appearance in the year 1695 up to the present day. Ills. 4000 w. *Prac Engr*—June 14, 1907. Serial. 1st part. No. 85235 A.

## Cooling Towers.

See same title, under HEATING AND COOLING.

## Cut-off.

Effects of Alterations to the Cut-Off in the Cylinders of Triple-Expansion and Compound Engines. W. S. Williams. An explanation. 5000 w. *Prac Engr*—Oct. 26, 1906. No. 80295 A.

## Draft Gauge.

Kent's Draught Gauge. Diagram, with description and explanation of its use in measuring the draught of chimneys. 1000 w. *Mech Engr*—Oct. 27, 1906. No. 80298 A.

## Economics.

Notes on Steam Plant Operation. Howard Williams. Considers both land and marine practice and the strict attention to

## STEAM ENGINEERING

## Engine Foundations

every possible source of loss or gain needed to secure satisfactory results. 1800 w. *Elec Wld*—Aug. 3, 1907. No. 86152.

## Energy Diagram.

A New Energy Diagram for Steam. Henry F. Schmidt. Presents the advantages of this diagram and the methods used in its construction, giving examples showing its value. Inset. 3500 w. *Elec Ry Rev*—Oct. 19, 1907. No. 87812.

## Engine Adjustment.

Adjusting the Sturtevant Compound Engine. Carl S. Dow. An illustrated article giving directions for setting valves and adjusting the governor and drainage systems of the vertical cross-compound type. 2000 w. *Power*—Aug., 1907. No. 86024 C.

## Engine Breakdowns.

An Engine Wreck. P. F. Walker. An illustrated account of an accident to a vertical cylinder. 1000 w. *Engr, U S A*—Aug. 15, 1907. No. 86410 C.

An Unusual Engine Wreck. Milton W. Arrowood. Describes an accident to an engine used to furnish power for a large grain elevator, and the method of repair. Ills. 1000 w. *Am Mach*—Vol. 30, No. 20. No. 84381.

Engine Breakdowns and Their Lessons. Michael Longridge. Information of interest from the annual report for 1906, in regard to the safe working of power plants. Ills. 7000 w. *Mech Engr*—Aug. 24, 1907. No. 86717 A.

## Engine Design.

Design of Engines for the Use of Highly Superheated Steam. Max E. R. Toltz. An illustrated discussion of the design of steam engines for very high temperatures. 1500 w. *Pro Am Soc of Mech Engrs*—Sept., 1907. No. 87431.

The Determination of the Revolving Masses in Crank Mechanisms (Die Ermittlung der Schwungmassen im Schubkurbelgetriebe). Richard v. Mises. A mathematical discussion of crank and flywheel problems in reciprocating engines. Serial. 3 parts. 6500 w. *Zeitschr d Oest Ing u Arch Ver*—Oct. 19, 26, Nov. 2, 1906. No. 80620 D.

Estimation of the Unbalanced Forces in Multi-Cylinder One-Crank Engines. Archibald Sharp. An investigation of the unbalanced forces in an engine of this type. 4000 w. *Inst of Civ Engrs*—No. 3658. No. 86374 N.

## Engine Foundations.

Steam-Engine Foundations. R. T. Strohm. Considers the requirements, loads suited to various soils, kind of ma-

# MECHANICAL ENGINEERING

## Engines

terial to be used, and things to guard against. 2000 w. Power—Oct., 1907. No. 87271 C.

Engine Foundations. Discusses the preparation of the ground, how to obtain the main center lines of the engine, etc., in the present number. Ills. 1800 w. Prac Engr—Sept. 27, 1907. Serial. 1st part. No. 87508 A.

## Engines.

Trials of Engineers in the Early Days. Alonzo G. Collins. Gives results of research in England for engine types of the time of Newcomen and Watt. Ills. 3000 w. Power—April, 1907. Serial. 1st part. No. 83243 C.

Types of Early Steam Engines Still Working in England. Information relating to a few plants installed over one hundred years ago, and still working. 1600 w. Sci Am Sup—March 2, 1907. No. 82649.

Selection of a Steam Engine. Chas. L. Hubbard. Gives a classification, discussing each, and the principles of their operation; and the things to be considered in selecting an engine for stated requirements. 3000 w. Elec Wld—Nov. 3, 1906. No. 80259.

Recent Aims and Achievements in German Heat-Motor Construction (Neuere Ziele und Erfolge des Deutschen Wärmekraftmaschinenbaues). H. Dubbel. The first part of the serial begins a description of recent developments in steam engines and turbines. Ills. 4000 w. Serial. 1st part. Zeitschr d Ver Deutscher Ing—May 18, 1907. No. 84983 D.

Small British Steam Engines. W. H. Booth. Illustrates and describes interesting designs. 3000 w. Cassier's Mag—Dec., 1906. No. 80746 B.

Mary. An illustrated description of a new compound piston drop valve engine recently installed in the Huddersfield Corporation Electricity Works. 2500 w. Engr, Lond—July 19, 1907. No. 85999 A.

Tandem Valve Steam Engine (Tandem-Ventildampfmaschine, Bauart Lentz). Karl H. Merk. Engine with Lentz valves. Illus. 800 w. Zeitschr d Ver eines Deutscher Ingenieure—Jan. 26, 1907. No. 82363 D.

The Proper Management of Corliss Engines. W. H. Wakeman. An illustrated article treating especially of the adjustment of the valve gear and how to avoid mistakes often made by engineers. 2200 w. Power—April, 1907. No. 83241 C.

Shop Talk About Steam Engines. C. W. Crawford. A comparison of the clearance and leakage losses in the various types of poppet valve, slide valve, and

## STEAM ENGINEERING

## Flash Steam

Corliss engines. 2500 w. Am Mach—Vol. 30, No. 13. No. 83306.

Engines with Lentz Valves for the Steamship "Rance." This cargo-boat was fitted with superheated-steam and poppet-valve engines and the results obtained compared with a sister ship, the Garonne, fitted with ordinary type of engine, without superheater. Ills. 1500 w. Engng—Jan. 18, 1907. No. 81998 A.

See also Clearance, Cut-off, Condensers, Hoisting Engines, Lubrication, Packing, Piston Wear, Rolling-Mill Engines, Rotary Engines and Steam Flow, under STEAM ENGINEERING; Pumping Engines and Pumping Plants, under HYDRAULICS; Air Compressors, Blowing Engines and Costs, under POWER AND TRANSMISSION; and Hoisting Engines, under MINING AND METALLURGY. MINING.

## Engine Speed.

Inertia Pressure at a Rational Measure of Engine Speed. Sanford A. Moss. Aims to show that the magnitude of initial inertia pressure is the principal function of the engine speed which needs to be taken into consideration. 2200 w. Sibley Jour of Engng—Oct., 1907. Serial. 1st part. No. 87866 C.

## Eolipile.

An Historical Account of the Eolipile; an Ancient Steam Generator. S. J. Berard. Reviews some early uses of the expansive force of steam, illustrating and describing the eolipiles, and explaining the applications made of the device. 2000 w. Yale Sci M—Dec., 1906. No. 81056 C.

## Exhaust Steam.

Back Pressure in Exhaust Steam Heating. Charles L. Hubbard. Shows graphically the important features connected with the raising of the initial or boiler pressure, or increasing the cut-off of the engine to offset this loss. 700 w. Heat & Vent Mag—June, 1907. No. 85265.

Steam Power vs. Gas Power. F. W. Ballard. A comparison showing the advantages to the steam engine from using exhaust steam heating. 2800 w. Engr, U S A—June 15, 1907. No. 85092 C.

See also Turbines, under STEAM ENGINEERING; and Exhaust Steam, under HEATING AND COOLING.

## Flash Steam.

The Flash Steam Generator. H. W. Bolsover. Discusses this method, especially in connection with the design of automobile vehicles, showing it to be applicable for such purposes. 1600 w. Cassier's Mag—Sept., 1907. No. 86616 B.

# MECHANICAL ENGINEERING

## Flue Gases

## STEAM ENGINEERING

## Fuels

### Flue Gases.

The Uehling Gas Composimeter. Illustrated description of an instrument which shows the quality of the flue gas, which is an index of the completeness of combustion. 2000 w. Power—June, 1907. No. 84656 C.

Gas Analysis for Steam-Users. John B. C. Kershaw. The present number discusses the characteristics of the waste gases, and taking samples. 3500 w. Elect'n, Lond—Nov. 16, 1906. Serial. 1st part. No. 80720 A.

Flue-gas Analysis: Its Value. Joseph W. Hays. Discusses its importance in determining furnace efficiency. 2000 w. Power—Oct., 1907. No. 87267 C.

Apparatus for Analyzing Flue Gases. Illustrates and describes Bement's improved Orsat apparatus, and Wilson's portable gas-analysis apparatus. 1200 w. Power—Aug., 1907. No. 86029 C.

The "Ados" Automatic CO<sub>2</sub> Recorder for Boiler Furnaces. Illustrates and describes a new type of recorder, designed in England, which is based upon the fact that a solution of caustic potash absorbs CO<sub>2</sub>. 2000 w. Sci Am Sup—Dec. 22, 1906. No. 81091.

Modernizing a Manufacturing Concern. Describes the writer's experience with the installation of superheaters, and with an automatic CO<sub>2</sub> recorder. 1500 w. Prae Engr—Dec. 21, 1906. No. 81330 A.

### Fuels.

Fuels for Steam Making. R. T. Strohm. Considers the heat-producing elements in fuels, the constituents, the requirements of good steam producing fuels, and related matters. 2500 w. Elec Wld—March 2, 1907. No. 82777.

Some Comparative Fuel Values. P. N. Evans. Briefly considers solid, liquid, and gaseous fuels. 1500 w. Purdue Engng Rev—1907. No. 85938 N.

Heat Production and the Constituents of Coal. S. W. Parr. Considers the varying proportions of combustible elements present and how they affect the heat value of the fuel. 2800 w. Eng & Min Jour—June 29, 1907. No. 85334.

The Choice of a Bituminous Coal. R. H. Kuss. Discusses the problem of selecting coal, considering the availability, cost, adaptability, smoke, refuse, and treatment. 2500 w. Eng Rec—Aug. 31, 1907. No. 86694.

The Burning of Washer Slate and Coke Braize. C. G. Atwater. Gives a report of trials made with this low-grade fuel at a boiler plant at Sydney, Cape Breton. A daily consumption of 63 tons showed a

saving of over \$43 a day over coal. 2500 w. Eng Rec—Nov. 24, 1906. No. 80577.

Burning Bituminous Slack and Lignites. George P. Hutchins. Discusses the waste from firing soft coals by hand, and aims to show that mechanical stokers provide an efficient method of burning cheap fuels, and that the saving effected will quickly pay for the expense of installation. Ills. 2500 w. Elec Wld—Jan. 5, 1907. No. 81511.

Burning Fine Anthracite Coal. R. T. Strohm. Discusses points in connection with the successful burning of low-grade fuel, types of furnace, firing, etc. Ills. 2500 w. Elec Wld—May 4, 1907. No. 84212.

Burning Cheap Grades of Fuel. Kingsley Williams. Points on the firing with anthracite dust and soft coal. 700 w. Elec Wld—Sept. 7, 1907. No. 86847.

Steam Production from the Cheaper Grades of Anthracite. William D. Ennis. An illustrated discussion of methods of burning the small and cheap grades, giving much information in regard to low-grade fuels. 2700 w. Engineering Magazine—Oct., 1907. Serial. 1st part. No. 87282 B.

Steam Production from the Cheaper Grades of Anthracite. William D. Ennis. This second part of the writer's discussion deals with the mechanical problems of air supply, grate and heating surfaces, etc., which affect the economy. 4000 w. Engineering Magazine—Nov., 1907. No. 87970 B.

Changing from Wood Fuel to Crude Oil. J. E. Anderan. Describes and illustrates the change by which a saving of \$12.90 every 24 hours was made possible. 900 w. Power—July, 1907. No. 85347 C.

Producer Gas for Firing Steam Boilers. A. M. Gow. Gives the writer's opinion as to why producer gas is not a suitable fuel for steam boilers. Ills. 2000 w. Power—Aug., 1907. No. 86025 C.

Kermode's Liquid-Fuel System Applied to Babcock and Wilcox Boilers. Illustrates and describes an installation of this system which has been successfully at work at the Toulou Brass Works in St. Petersburg. 1500 w. Engng—July 19, 1907. No. 85994 A.

The Application of Oil Burners to Steam Boilers. William Kavanagh. Gives some facts pertaining to oil burners, their structure and application to steam boilers. Ills. 1500 w. Elec Wld—May 4, 1907. No. 84211.

See also Turbine Testing, under STEAM ENGINEERING; and Locomotive Coals, un-

# MECHANICAL ENGINEERING

## Fuel Specifications

der RAILWAY ENGINEERING, MOTIVE POWER AND EQUIPMENT.

## Fuel Specifications.

The Purchase of Coal Under Specifications. J. E. Woodwell. Presented at meeting of Am. Soc. for Test. Mat. Considers methods of sampling and analysis, variations in heating values, etc. 6000 w. Mines & Min—Sept., 1907. No. 86771 C.

## Fuel Testing.

Illinois Coal Tests. Henry B. Dirks. Read before the Illinois Soc. of Engrs. & Survs. A report of tests made of these coals for their heat value, and for their adaptability to power-gas production, and on the washing and coking of coals. 2000 w. Eng Rec—Feb. 23, 1907. No. 82523.

Testing and Purchasing Coal for Steam Plants. A. O. Doane. Discusses methods of sampling and testing coal and the advantage of frequent tests to large consumers. 3500 w. Eng News—Feb. 7, 1907. No. 82184.

The Fuel-Testing Plant of the Geological Survey. C. T. Wilkinson. Illustrations and particulars of the plant in Virginia. 800 w. Eng & Min Jour—Sept. 21, 1907. No. 87167.

The Fuel-Testing Plant of the United States Geological Survey at Norfolk, Va. Herbert M. Wilson. A report of the work carried out, and description of plant. 3000 w. Eng News—Oct. 10, 1907. No. 87547.

A Review of the United States Geological Survey Fuel Tests Under Steam Boilers. L. P. Breckenridge. Also discussion. 19600 w. Jour W Soc of Engrs—June, 1907. No. 85723 D.

The Swiss Government Fuel-Testing Establishment in Zürich (Die Eidgenössische Prüfungsanstalt für Brennstoffe in Zürich). Heinrich Trachsler. Describes in detail the various parts of the establishment and the apparatus installed. Ills. 4000 w. Schweiz Bau—Aug. 24, 1907. No. 86959 D.

## Governing.

Speed Regulation of Engines. G. James Wells. Read before the Manchester Assn. of Engrs. Considers the actual causes of variation of the turning moment of reciprocating engines, showing the effects have a periodic character. 4400 w. Mech Engr—Jan. 19, 1907. No. 81978 A.

The Speed Regulation of Steam Engines. Sterling H. Bunnell. Illustrates and describes various types of governors. 2500 w. Cassier's Mag—Oct., 1907. No. 87388 B.

Speed Variations Due to Engine Gov-

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## Indicators

ernors (Variations Périodiques de Vitesse dues aux Régulateurs des Moteurs). P. Boucherot. Gives a mathematical discussion of the theory of governors and points out the discrepancies between their theoretical effect and the results obtained in practice. Ills. 9000 w. Revue de Mécanique—May 31, 1907. No. 84993 E + F.

New Speed Governor (Neuere Geschwindigkeitsregler). Ferd. Strnad. Description of a new type of inertia governor for steam engines. Serial. 2 parts. 5000 w. Illus. Zeitschr d Ver Deutscher Ing—Jan. 5 and 12, 1907. No. 82357 each D.

Shaft Governors. C. F. Swingle. General remarks, with descriptions of Poncelet's governor, Siemens' governor, and the Fitchburg shaft governor. Ills. 2200 w. Engr, U S A—March 1, 1907. No. 82743 C.

Experience with a Putnam Engine. W. H. Wakeman. Gives an experience with an old-fashioned Putnam engine of value to engineers in charge of any kind of a slow-speed governor that responds slowly to changes in the load carried. Ills. 900 w. Power—June, 1907. No. 84652 C.

Governors for High-Speed Engines. A. Houlson. Describes methods of governing steam engines, and types of governors. Ills. 3500 w. Mech Engr—June 8, 1907. Serial. 1st part. No. 85096 A.

Some Peculiarities of the Rites Governor. S. H. Bunnell. Discusses some peculiarities in the action of this governor, the causes and prevention. 1500 w. Engr, U S A—Sept. 2, 1907. No. 86708 C.

A Balanced Automatic Engine Governor. George P. Hutchins. Illustrated description of the improved design of the American ball governor. 1700 w. Engr, U S A—Oct. 15, 1907. No. 87732 C.

## Hoisting Engines.

Test of a Modern Winding Engine. David A. Bremner. An analysis of tests carried out on a compound non-condensing winding engine at the Sherwood Colliery. Ills. 2500 w. Engr, Lond—Dec. 14, 1906. No. 81253 A.

## Indicator Diagrams

Straight Line Expansion Diagrams. An explanation of the method of laying out expansion curves, and straight-line diagrams. 2000 w. Power—Jan., 1907. No. 81463 C.

A Study of the Zeuner Slide-Valve Diagram. E. S. Hawkins. Considers Zeuner's diagram in detail. 3000 w. Power—Jan., 1907. No. 81456 C.

## Indicators.

The Continuous Indicator for Rolling-

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## Indicators

Mill Engine Work. Robert L. Streeter. Considers the points a good indicator should possess for this work, and the use of the continuous indicator, giving diagrams. 2500 w. Power—Jan. 1, 1907. No. 81457 C.

Indicator Practice. Arthur Curtis Scott. Illustrates and describes types of indicators and reducing gears, methods of taking diagrams, and of combining diagrams. 3500 w. Engr, U S A—Sept. 16, 1907. No. 87048 C.

Indicators (Neuerungen an Indikatoren). A. Wagener. Illustrates and describes several newly-developed devices and gives a technical discussion of their use. 7500 w. Zeitschr d Ver Deutscher Ing—Aug. 31, 1907. No. 86987 D.

## Injectors.

Automatic and Positive Injectors. Frank O'Leary. Explains how a lifting injector may be adapted to non-lifting conditions and vice versa. 1000 w. Engr, U S A—Nov. 1, 1906. No. 80201 C.

Injectors (Injektoren). Ph. Michel. Discussion of the theory of the injector, and description of experiments. Ill. 1800 w. Zeitschr d Ver Deutscher Ing—Dec. 1, 1906. No. 81151 D.

The Operation and Care of Injectors. W. H. Wakeman. A practical discussion of the leading types, explaining their action and the most approved methods of connecting. Ills. 2500 w. Power—Aug., 1907. No. 86027 C.

The Injector and Some Requirements for Its Successful Operation. Paul E. Capraro. Explains the principle on which its operation is based, illustrates and describes types, discussing injector troubles and their remedies. 2000 w. Engr, U S A—Oct. 1, 1907. No. 87325 C.

## Lubrication.

Lubricating Arrangements for Marine Engines (Schmiervorrichtungen für Schiffsmaschinen). C. Strebel. Illustrated description of apparatus and methods for lubricating all parts of ships' engines, and for cleaning and recovering the oil. Serial. 2 parts. 6500 w. Zeitschr d Ver Deutscher Ing—Oct. 20 and 27, 1906. No. 80601 each D.

Methods of Internal Lubrication. Robert R. Keith. Illustrates and briefly describes various types of lubricators. 1300 w. Engr, U S A—Dec. 15, 1906. No. 81050 C.

The Lubrication of High-Speed Machinery (Die Schmierung Schnellaufender Maschinen). K. Lenz. Describes methods used for lubricating journals,

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crossheads, pistons, eccentrics, etc. Ills. 6500 w. Zeitschr d Ver Deutscher Ing—June 1, 1907. No. 85675 D.

The Design of Ring Lubricating Devices (Die Bearbeitung der Ringschmierlager). C. Volk. Illustrated description of various types. 2000 w. Zeitschr d Ver Deutscher Ing—Aug. 10, 1907. No. 86982 D.

Lubricating Oils (Les Huiles à Graisser). Ch. Baron. Outlines the characteristics of a good lubricating oil, particularly for use in engine cylinders, with description of methods and apparatus for testing. Curves and tables. 2500 w. Mem Soc Ing Civ d France—May, 1907. No. 85601 G.

## Mechanical Draft.

Mechanical Draft Systems. Explains the principles and advantages of artificial draft, giving illustrated description of details of installations. 2000 w. Engr, U S A—Jan. 1, 1907. No. 81434 C.

The Application of Mechanical Draft to Stationary Boilers. Walter B. Snow. Presents the advantages of mechanical draft, and discusses the cost. 3500 w. Cal Jour of Tech—March, 1907. No. 83190.

Practical Notes on the Application of Fans for Induced Draught and Other Purposes. W. H. Casmey. Presents the importance of air-moving machines and the economies to be effected by their use. 3000 w. Elec Engr, Lond—Nov. 10, 1906. No. 80912 A.

Fans for Draft, Forced and Induced. Charles L. Hubbard. Directions for calculating proportions and capacity of fans, the horse-power required, and the volume of air delivered. Diagrams. 2500 w. Power—May, 1907. Serial. 1st part. No. 83861 C.

The Application of the Fan Blower to Mechanical Draft. Carl S. Dow. A discussion of the blower system of forced or induced draft, illustrating some of the fans used. 3500 w. Harvard Eng Jour—April, 1907. No. 83789 D.

## Natural Draft.

Construction of Natural Draught Furnaces. Walter J. May. Discusses some of the essentials of good natural draught, and the uses to which it may be applied. 1800 w. Prac Engr—May 31, 1907. No. 84877 A.

## Packing.

Fitting the High-Pressure Cylinder of an American Ball Engine with a Special Metallic Packing. William Kavanagh. Illustrates and describes a difficult application of metallic packing. 1200 w. Power—Jan., 1907. No. 81460 C.



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### Piping.

High Pressure Steam Piping in Marine Work (Hochdruckdampfrohrleitungen im Schiffsbetriebe). Hr. Uthemann. Discussion of materials, joints, flanges, etc., with illustrations. 2400 w. Zeitschr d Ver Deutscher Ing—Nov. 24, 1906. No. 81145 D.

Troubles Caused by Faulty Piping Work. H. A. Jahnke. Examples of mistakes made by engineers and fitters, and suggestions how to remedy or avoid them. Ills. 2500 w. Power—May, 1907. No. 83862 C.

### Piston Wear.

Cylinder and Piston Wear in Large Horizontal Engines. L. H. Edwards. A plea for a change in piston design. Ills. 900 w. Power—Dec., 1906. No. 81003 C.

### Plants.

See Power Plants, under POWER AND TRANSMISSION; and Central Stations and Isolated Plants, under ELECTRICAL ENGINEERING, GENERATING STATIONS.

### Rolling Mill Engines.

Heavy Duty Rolling Mill Engines. Illustrated description of roughing mill engines representing the most modern practice for this class of work. 1000 w. Ir Age—Nov. 1, 1906. No. 80153.

Heavy Corliss Engines. Illustrated description of heavy engines especially constructed for rolling-mill service. 1200 w. Engr, U S A—Dec. 1, 1906. No. 80798 C.

### Rotary Engines.

Rotary Engines (Rotationskraftmaschinen). Leo Russmann. Illustrates and describes numerous types. 3500 w. Elektrotech u Maschinenbau—July 14, 1907. No. 86251 D.

### Safety Appliances.

Inexpensive Devices for Prevention of Fly-Wheel Wrecks. E. E. Clock. Illustrates three devices which can be installed at small cost. 700 w. Power—July, 1907. No. 85346 C.

Safety Appliances in the Engine Room. William Wallace Christie. Calls attention to dangers due to increasing use of power machinery, illustrating results of disasters, and giving illustrated descriptions of special safety appliances for use in the engine room. 3000 w. Cassier's Mag—Aug., 1907. No. 86009 B.

Modern Safety Devices for Prime Movers. C. C. Major. The important features of various engine-stop and speed-limit systems, and their application, are illustrated and described. 3500 w. Power—Oct., 1907. No. 87270 C.

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### Saturated Steam.

A Useful Diagram of Steam Properties. H. F. Schmidt and W. C. Way. Gives a diagram from which may be found the physical properties of moist and superheated steam at different pressures and temperatures. 3500 w. Power—Aug., 1907. No. 86028 C.

Physical Properties of Saturated Steam. Fred R. Low. Explains the steam tables; why temperature varies with the pressure, and what is meant by latent heat, saturated steam, etc. 4500 w. Power—Sept., 1907. No. 86668 C.

### Smoke Prevention.

Smoke Prevention in the Power House. C. H. Benjamin. Explains why smoke abatement saves fuel, and the value of the mechanical stoker for securing good combustion, illustrating and describing types. 2200 w. Cassier's Mag—Feb., 1907. No. 82286 B.

Smoke Prevention in Factories and Electric Supply Stations. John B. C. Kershaw. Describes the principles underlying the methods by which fuel may be burned without smoke-production, giving an account of the work of a Smoke Abatement Society. Also discussion. 7000 w. Jour Soc of Arts—March 22, 1907. No. 83404 A.

Smokeless Furnaces and Smoke Suppression. A. Bement. Abstract from the Peabody Atlas, explaining the conditions for perfect combustion and methods of burning fuel. Ills. 2500 w. Engr, U S A—April 1, 1907. No. 83384 C.

The Smoke Problem. David Townsend. Considers the difficulties and the attempted solutions of the smoke problem. 3000 w. Cassier's Mag—Oct., 1907. No. 87391 B.

Practical Smoke Abatement. William Nicholson. Abridged paper, read before the Sanitary Inspectors' Assn. Refers to conditions in London, reviewing action taken to stop unnecessary smoke, and discusses coal smoke, the effects, the cost, practical abatement, smoke from boilers, furnaces, fireplaces, smoke law and its amendment and administration. 3500 w. Elec Engr, Lond—Sept. 29, 1907. Serial. 1st part. No. 87513 A.

Boiler Room Economy. Paul M. Chamberlain. Abstract of lecture before the International Assn. for the Prevention of Smoke. Discusses means of securing perfect combustion, losses, and the stoker as a smoke abater. 2500 w. Engr, U S A—Aug. 1, 1907. No. 86132 C.

Timmis Smoke and Spark Consuming System. Illustrates and describes an ap-

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## Specific Heat

paratus for forcing air in the front of the fire box immediately below the brick arch. 500 w. R R Gaz—Jan. 25, 1907. No. 81924.

## Specific Heat.

Influence of Pressure and Temperature on the Specific Heat of Steam (Die Abhängigkeit der spezifischen Wärme Cp des Wasserdampfes von Druck und Temperatur). O. Knoblauch and Max Jakob. Comprehensive account of recent determinations of this constant. Illus. Serial. 2 parts. 9900 w. Zeitschr d Vereines Deutscher Ingenieure—Jan. 19 and 26, 1907. No. 82361 each D.

## Stacks.

The Calculation of Smokestacks for Manufactories (Die Berechnung von Fabrikschornsteinen). C. Gaab. Discusses the findings of a commission appointed by the Prussian Minister of Public Works to investigate conditions of safe construction of smokestacks. 6200 w. Zeitschr d Ver Deutscher Ing—April 27, 1907. No. 84147 D.

Chimney Design. Considers types of chimney, their construction and draft power. 3300 w. Engr, U S A—Jan. 1, 1907. No. 81433 C.

The Layout and Construction of Steel Stacks. An illustrated article discussing methods of anchoring of self-supporting stacks, details of riveting, and other features of the construction. 2500 w. Boiler Maker—Aug., 1907. No. 86041.

## Steam Consumption.

The Influence of Steam Consumption on the Quality of Steam Generated in a Boiler. G. W. Burley. Reports the results of trials made to determine the quality of the steam generated under different conditions of load and steam consumption. 700 w. Elec Engr, Lond—Dec. 14, 1906. No. 81240 A.

A Graphical Table for the Determination of Steam Consumption in Large Plants by Condenser Measurements (Ueber eine Graphische Tabelle zur Bestimmung des Dampfverbrauches grösserer Aggregate aus dem Kondensat). Hans Neubauer. Gives curves and tables and describes a method of measuring steam consumption in large plants with a central condenser plant. Ills. 3000 w. Oest Zeitschr f Berg u Hüttenwesen—Aug. 17, 1907. No. 86944 D.

## Steam Flow.

The Dynamics of the Flow of Steam in Reciprocating Engines (Zur Dynamik der Dampfströmung in der Kolbendampfmaschine). W. Schüle. A compre-

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hensive mathematical discussion. Diagrams. Serial. 3 parts. 10000 w. Zeitschr d Ver Deutscher Ing—Nov. 24, Dec. 1 and 8, 1906. No. 81146 each D.

The Dynamics of the Flow of Steam in Reciprocating Engines (Dynamique de l'Ecoulement de la Vapeur dans les Machines à Pistons). W. Schüle. A translation from *Zeitschrift des Vereines Deutscher Ingenieure*. Ills. 10,000 w. Serial. 1st part. Rev d Mécan—June 30, 1907. No. 86207 E + F.

Formulas for the Flow of Steam in Pipes. Prof. G. F. Gebhardt. A comparison of accepted formulas, with curves showing the drop in pressure for different pipe sizes and velocities. 2500 w. Power—June, 1907. No. 84655 C.

Cylinder Port Velocities. Jacob H. Wallace. Presents a method for determining the velocity of flow through the ports of a steam engine. 1500 w. Pro Am Soc of Mech Engrs—Oct., 1907. No. 87770.

## Steam Plant.

A One Hundred Horse-Power Steam Plant. Descriptions of such plants by James F. Hobart, M. B. Godfrey, and C. R. McGahey. Ills. 7500 w. Power—July, 1907. No. 85340 C.

## Steam Trap.

Testing a Steam Trap at High Pressures. An illustrated account of tests made of a steam trap operating at 375 pounds pressure. 900 w. Engr, U S A—April 1, 1907. No. 83387 C.

## Stokers.

Mechanical Stokers at the Electric Stations of Bercy and Vitry (Foyer Mécaniques des Usines Electriques de Bercy (Paris) et de Vitry (Seine). J. A. Lencauchez. Illustrated description of the Düsseldorf system of mechanical stokers and grates, at electric stations in and near Paris, with results of tests. 1500 w. Génie Civil—Oct. 27, 1906. No. 80627 D.

Mechanical Stokers. Illustrated descriptions of various types. 4500 w. Engr, U S A—Jan. 1, 1907. No. 81432 C.

Automatic Stokers. (Automatische stookinrichtungen). J. De Kuyser. Description and discussion of service tests of several types in use in Europe. Illus. Tables. 5400 w. De Ingenieur—Nov. 17, 1906. No. 81856 D.

Dust-Fuel Stokers and Auxiliary Plant. W. R. Harrison. Read before the Leeds Univ. Engng. Soc. Discusses the conditions for complete combustion, methods of firing dust fuel, especially with natural draught and fuel mechanically introduced

## MECHANICAL ENGINEERING

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independent of the air supply—the Schwartzkopff system. 3500 w. *Ir & Coal Trds Rev*—May 24, 1907. No. 84764 A.

### Stoking.

The Firing of Steam Boilers. F. Smal and L. Timmermans, in the *Revue Univ. des Mines*. An interesting account of the trials and results of a competition at the Liège Exhibition, and discussion of the influence of efficient stoking on costs. 2000 w. *Col Guard*—Nov. 9, 1906. Serial. 1st part. No. 80491 A.

Instructions to Govern the Use of Coke on Locomotives. Instructions issued by J. E. Muhlfeld, of the B. & O. R. R. to govern the use of coke on the locomotives of that road. 1200 w. *Am Eng & R R Jour*—March, 1907. No. 82781 C.

Underfeed Firing (Unterschubfeuerungen). A. Pradel. Description of furnaces built for both hand and mechanical underfeed. Illus. 3300 w. *Gesundheits Ingenieur*—March 30, 1907. No. 83643 D.

Is Machine Stoking Economical? A. W. Bennis. Abstract of a paper read before the Keighley Assn. of Engrs. Gives particulars of relative cost of mechanical and hand firing, discussing some of the objections advanced to the use of machine firing. 1300 w. *Aust Min Stand*—Dec. 19, 1907. No. 81968 B.

See also Mechanical Stokers, under STEAM ENGINEERING.

### Superheating.

Superheated Steam. Thomas Sugden. Read before the South Wales Inst. of Engrs. On the properties of saturated and superheated steam, specific heat, losses, volume, efficiency, economy, etc. 3000 w. *Mech Engr*—June 29, 1907. Serial. 1st part. No. 85494 A.

The Specific Heat of Superheated Steam. Discusses results of recent experiments. 1500 w. *Engng*—Feb. 22, 1907. No. 82832 A.

A Dynamical Method of Determining Experimentally the Specific Heat Under Constant Pressure of Superheated Steam. Sydney B. Bilbrough. Describes the practical carrying out of these experiments, also what values can be deduced from the results. 14800 w. *Jour of Transvaal Inst of Mech Engrs*—Dec., 1906. No. 82055 E.

Specific Heat of Superheated Steam. A. R. Dodge. Presents two of the methods employed by the writer in making investigations, describing apparatus, and discussing results. Diagrams. 2800 w. *Pro Am Soc of Mech Engrs*—April, 1907. No. 83761.

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Specific Heat of Superheated Steam. Discussion by R. W. Stovel of the paper by A. R. Dodge on this subject. 1400 w. *Pro Am Soc of Mech Engrs*—May, 1907. No. 84507 F.

Entropy Lines of Superheated Steam. Arthur M. Greene, Jr. Gives results of experiments of Knoblauch and Jakob. Curves and diagrams. 1500 w. *Pro Am Soc of Mech Engrs*—June, 1907. No. 84645 F.

The Latest Research on the Specific Heat of Superheated Steam. Robert H. Smith. An account of recent investigations carried out at Munich, giving curves showing the new results. 2000 w. *Engr, Lond*—Aug. 23, 1907. No. 86739 A.

Present Practice in the Use of Superheated Steam. Reginald Pelham Bolton. A review of American engineering practice during the last ten years in this field, the progress and the economy effected. 3300 w. *Engineering Magazine*—March, 1907. Serial. 1st part. No. 82635 B.

Present Practice in the Use of Superheated Steam. Reginald Pelham Bolton. Discusses American practice and applications, the advantages, limitations, etc. 3000 w. *Engineering Magazine*—April, 1907. No. 83316 B.

Present Practice in the Use of Superheated Steam. Reginald Pelham Bolton. This third and concluding article of a series discusses locomotive and marine applications and superheater design. A bibliography of the contributions to this subject is appended. Ills. 2500 w. *Engineering Magazine*—May, 1907. No. 83938 B.

The Superheating of Steam and its Distribution by Balanced Valves (La Surchauffe de la Vapeur et sa Distribution par Soupapes Equilibrées). L. Piaud. Illustrated description of apparatus for both stationary and locomotive work. Serial. 2 parts. 4500 w. *Génie Civil*—Dec. 8 and 15, 1906. No. 81138 each D.

Materials for the Control of Superheated Steam. M. W. Kellogg. Deals particularly with pipe, fittings, valves, and the details connected therewith, such as joints, gaskets, etc. 2300 w. *Pro Am Soc of Mech Engrs*—June, 1907. No. 84648 F.

Superheaters and Superheating Boilers. Brief illustrated descriptions of types of superheaters, explaining their advantages. 2500 w. *Engr, U S A*—Jan. 1, 1907. No. 81435 C.

Superheat and Furnace Relations. Reginald Pelham Bolton. Considers methods of generating superheated steam, and their improvement. 1400 w. *Pro Am*

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Soc of Mech Engrs—June, 1907. No. 84637 F.

Flow of Superheated Steam in Pipes. E. H. Foster. Gives conclusions reached from data collected, showing that the laws governing the flow of superheated steam differ from those governing saturated steam. 700 w. Pro Am Soc of Mech Engrs—May, 1907. No. 84505 F.

Experiences with Superheated Steam. George H. Barrus. Notes dating back to 1874 on the writer's experiences with superheated steam. 2500 w. Pro Am Soc of Mech Engrs—May, 1907. No. 84504 F.

Use of Superheated Steam in an Injector. Strickland L. Kneass. Note on the essentials to obtain good results from an injector with superheated steam. 500 w. Pro Am Soc of Mech Engrs—May, 1907. No. 84503 F.

Superheated Steam for Steam Turbines. J. A. Moyer. Discusses some of the important properties of superheated steam, giving results derived from experience. 2500 w. Harvard Engng Jour—June, 1907. No. 85192 D.

Superheated Steam for an Underground Pumping Engine at the St. Pankraz Mine at Nürschan (Heissdampf beim Betrieb einer Unterirdischen Wasserhebmachine der St. Pankraz-Zeche in Nürschan). Julius Divis. Discusses the problem of using superheated steam underground and illustrates and describes the Nürschan plant, giving details of operation. 4000 w. Oest Zeitschr f Berg u Hüttenwesen—Aug. 24, 1907. No. 86945 D.

Superheated Steam on Locomotives. H. H. Vaughan. On the use of superheated steam on locomotives in the United States and Canada, illustrating and describing types of superheaters applied, giving economical results, and maintenance results, and conclusions. 3500 w. Pro Am Soc of Mech Engrs—June, 1907. No. 84640 F.

The Cole Locomotive Superheater. W. F. M. Goss. Notes concerning the performance of the Cole superheater as applied to the Purdue University locomotive "Schenectady No. 3." 1000 w. Pro Am Soc of Mech Engrs—May, 1907. No. 84506 F.

See also Engine Design, under STEAM ENGINEERING; and Superheating, under RAILWAY ENGINEERING, MOTIVE POWER AND EQUIPMENT.

## Thermal Currents.

The Interchange of Heat in Steam-Engine Cylinders. W. F. Cleveland. A study of the flow of thermal currents and of the theory of the interchange of heat between the working steam and the inter-

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nal surfaces of the cylinder walls and pistons. 2500 w. Engineering Magazine—July, 1907. No. 85310 B.

## Thermodynamics.

Heat Power. John Batey. Brief discussion of heat in regard to the steam engine, giving suggestions for increasing the efficiency. 2400 w. Prac Engr—March 22, 1907. No. 83411 A.

Thermal Properties of Water and Steam at High Temperatures. Deals with researches by Prof. C. Dieterici, of the Technical High School of Hanover; and of Prof. Oscar Knoblauch and Dr. Max Jacob of Munich. 2000 w. Engng—March 15, 1907. Serial. 1st part. No. 83466 A.

Steam at High Pressures and Temperatures. Considers the properties of steam at high temperatures, and some errors in calculations submitted, in the present article. 2300 w. Engr—Jan. 4, 1907. Serial. 1st part. No. 81647 A.

The Dynamics of Steam in Piston Engines (Zur Dynamik der Dampfströmung in der Kolbendampfmaschine). W. Schüle and Otto Schneider. Mathematical treatment. Diagrams. 2200 w. Zeitschrift des Vereins Deutscher Ingenieure—Feb. 9, 1907. No. 82924 D.

The Action of Steam During Expansion. Fred R. Low. Explains why steam exerts pressure; why pressure varies with volume and temperature; and the isothermal and adiabatic conditions. 3000 w. Power—Oct., 1907. No. 87272 C.

Gouy's Theorem and Some of Its Applications (Le Théorème de M. Gouy et quelques-unes de ses Applications). E. Jouquet. A mathematical discussion of Gouy's Theorem and of its application to compressed air and steam machines. Ill. 14400 w. Rev de Méch—March 31, 1907. No. 83682 E + F.

## Traps.

Steam Traps. W. H. Wakeman. Illustrates and describes appliances worthy of adoption wherever steam is used for heating or drying purposes, or for long pipe lines. 5700 w. Sci Am Sup—Dec. 8, 1906. No. 80883.

## Turbine Lubrication.

Best Method of Supplying Oil to Turbines. Thomas Franklin. Presents the advantages of the isolated oil-filtering and cooling plant, and points to be looked to in its design and operation. 2500 w. Power—Sept., 1907. No. 86673 C.

## Turbines.

The Development and Present Status of the Steam Turbine in Land and Marine Work. E. M. Speakman. An in-

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interesting review of the present development, considering their adoption for a variety of service, their power, and related matters. 5 plates. 11000 w. Trans Inst of Engrs & Shipbldr in Scotland—Oct. 23, 1906. No. 80703 N.

The Development and Present Status of the Steam Turbine in Land and Marine Work. Discussion of paper by E. M. Speckman. 5000 w. Trans Inst of Engrs & Shipbldr in Scotland—Oct. 23, 1906. No. 81297 N.

The Development and Present Status of the Steam Turbine in Land and Marine Work. Discussion of E. M. Speakman's paper. 3000 w. Trans Inst of Engrs & Shipbldr in Scotland—Dec. 18, 1906. No. 82628 N.

Recent Steam Turbine Developments. W. L. R. Emmet. Abridgement of a paper presented to the Nat. Elec. Lgt. Assn. Considers the aims of recent designs of Curtis turbines, showing the progress that has been made. 2500 w. Eng Rec—June 22, 1907. No. 85199.

A Technical Review of the Development of the Steam Turbine and Turbo-dynamo (Dampfmaschinen und Turbodynamos in Betriebstechnischer Hinsicht). F. Niethammer. The first part of the serial reviews the progress of the turbine. Ills. 4000 w. Serial. 1st part. Elektrotech u Maschinenbau—July 21, 1907. No. 86252 D.

The Steam Turbine (Die Dampfmaschine). Herr Hofweber. General review of the principles of the various types of steam turbine describing their construction, with special reference to the Zoelly turbine. Ills. 5000 w. Two parts. Zeitschr d Oest Ing u Arch Ver—April 12 and 19, 1907. No. 84179 each D.

The Steam Turbine. A. H. Gibson. Considers the lines along which the turbine has been developed, the advantages and disadvantages of the types thus far evolved, and the directions in which future developments may be looked for. 3000 w. Cassier's Mag—Nov., 1906. No. 80210 B.

The Steam Turbine. Charles Proteus Steinmetz. Explains the principles of the impulse turbine and the reaction turbine, and the problem of developing the steam turbine. Ills. 4000 w. Cassier's Mag—July, 1907. No. 85712 B.

The Modern Steam Turbine. Arnold Frean Harrison. A general description of the best known types of this class of prime mover, with some of the reasons for the construction peculiar to each. Ills. 3500 w. Inst of Civ Engrs (Student's Paper, No. 572). No. 86376 N.

The Steam-Turbine of the Allgemeine Electricitäts-Gesellschaft, Berlin. O. Lasche. Abstract translation of a paper read in June, 1906. Illustrated descriptions of the building of the Curtis turbine in Germany. 3500 w. Engng—Nov. 16, 1906. No. 80730 A.

The Curtis Turbine (Die A. E. G. Curtis Turbine). O. Lasche. Comprehensive description of the Curtis turbine as built by the Allgemeine Electricitäts Gesellschaft, for stationary and marine purposes. Illus. 7600 w. Schiffbau—March 27, 1907. No. 83628 D.

The Parsons Steam Turbine. John D. Bailie. Discusses modern turbines, showing the maintenance of high vacua is quite practicable at moderate working costs, and considers the subject of the steam turbine taking the exhaust steam of the reciprocating engine and economically converting it into power, and other subjects of interest. Ills. 3500 w. Ir & Coal Trds Rev—Dec. 7, 1906. Serial. 1st part. No. 81036 A.

The Steam Turbine. Leo A. Phillips. Considers particularly the Westinghouse-Parsons type of turbine, illustrating and describing its construction, its performance and commercial features. General discussion. 10500 w. Pro Ry Club of Pittsburgh—Feb. 22, 1907. No. 84662 C.

Parsons Type Steam Turbines. Charles H. Naylor. A mathematical study of the flow of steam through a turbine of the reaction type. 2500 w. Engr, Lond—Oct. 4, 1907. No. 87599 A.

Some Practical Points in Steam Turbine Construction; with Particular Reference to the Parsons Type. St. John Chilton. Read before the Am. St. & Int. Ry. Engng Assn. Deals with constructional details. Ills. 3300 w. St Ry Jour—Oct. 19, 1907. No. 87815.

Improvements in the Laval Turbine (Die Vervollkommenung der Lavalturbine). Felix Langen. Account of changes in the design of details, to increase the efficiency. Tables. Serial. 3 parts. 5000 w. Zeitschr f d Gesamte Turbinenwesen—March 9, 20, and 30, 1907. No. 83631 each D.

The Melms & Pfenninger Steam Turbine (500-K. W. Dampfmaschine, Bauart Melms & Pfenninger). M. Schröter. Illustrated description of steam turbine driving two 250-kilowatt dynamos, and full account of tests. Tables. Serial. 1st part. 2000 w. Zeitschr d Ver Deutscher Ing—Nov. 10, 1906. No. 80616 D.

Steam Turbines at the Nuremberg 1906 Exposition (Die Dampfmaschinen auf der Bayerischen Landesausstellung Nürnberg 1906). C. W. Gesell. Comprehensive

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sive description of various makes of turbines exhibited. Illus. 2800 w. *Zeitschrift für das Gesamte Turbinenwesen*—Oct. 30, 1906. No. 81842 D.

900 Horse-Power Turbine for India. Illustrated description of one of the most powerful turbines yet made. 800 w. *Engr*, Lond—Feb. 8, 1907. No. 82473 A.

The Kerr Steam Turbine. C. V. Kerr. Illustrated description of a turbine built on the principle of the Pelton water wheel. It is a nozzle and bucket turbine of the impulse type. 3000 w. *Power*—March, 1907. No. 82655 C.

The Sturtevant Steam Turbine. Illustrated detailed description. 900 w. *Eng News*—Oct. 31, 1907. No. 87985.

Steam Turbine Plant in the Black Hills. H. Boyd Brydson. Illustrated description of the Pluma Station of the Consolidated Power & Light Co. of South Dakota and its cooling spray system for condensing water. 2000 w. *Engr*, U S A—June 1, 1907. No. 84779 C.

The Largest Steam Turbine Power-Plant in Europe. Franz Koester. Illustrated description of the St. Denis Station of the Société d'Electricité de Paris, 1400 w. *Power*—Feb., 1907. No. 82011 C.

Steam Turbines and Their Use in Electric Railway Power Plants (Die Dampfturbinen und ihre Anwendung auf den elektrischen Bahnbetrieb). Guido Semenza. Comparison between the leading types and examples of their use in Europe. 5900 w. Serial. 3 parts. *Zeitschrift für das Gesamte Turbinwesen*—Jan. 30, Feb. 9 and Feb. 20, 1907. No. 82940 each D.

Steam Turbines and Central Stations (Las Turbinas de Vapor y las Centrales Eléctricas). Emilio Guarini. A review of the development of the steam turbine and a discussion of its use in generating electric power. 5000 w. *La Ingeniería*—May 30, 1907. No. 85693 D.

Is a 200 Horse Power Steam Turbine Plant Economical? (Ist eine 200 Pferdige Dampfturbinenanlage Wirtschaftlich?) W. A. Müller. Compares the small steam turbine with the piston engine of the same power as regards both first cost and operating expenses. Tables. 1500 w. *Zeitschrift für das Gesamte Turbinwesen*—May 20, 1907. No. 84953 D.

Steam Turbine Characteristics. Hans Holswarth. Gives examples illustrating the practical use of the logarithmical p-v diagram, all the computations having been made with a five-inch slide rule. 4000 w. *Pro Am Soc of Mech Engrs*—Nov., 1906. No. 80530 C.

The Erection of Two Large Steam

Turbines. A. G. Christie. An illustrated detailed account of the methods used for overcoming difficulties in handling and assembling the heavy parts, with the minimum expense of time and trouble, in erecting the large turbines of the Brooklyn Rapid Transit Co., at the Williamsburg power house, and the Gold Street power house of the Edison Ill. Co. 2000 w. *Sib Jour of Engng*—Nov., 1906. No. 80414 C.

Notes on Turbine Erection and Operation. Considers features in connection with the erection of turbines, balancing, starting, vibration, lubrication, etc. 2500 w. *Elec Rev*, Lond—Dec. 28, 1906. No. 81524 A.

Operating Experience with Four-Stage Curtis Turbines. Abstract of a paper by C. E. Stanton, read before the Iowa Elec. Assn., giving experience at Dubuque, Iowa. 2200 w. *Eng Rec*—Dec. 29, 1906. No. 81310.

Turbines. A brief account of the necessary care to be exercised in the operation of turbines for driving generators, the two most important points being efficient lubrication and good steam. 1200 w. *Elec Rev*, Lond—May 25, 1907. No. 84750 A.

Practical Troubles with Steam Turbines. E Russell. Discusses cases of stripping the blades, improperly designed cylinders, deposits and methods of cleaning. 1200 w. *Power*—Jan., 1907. No. 81459 C.

Notes on Turbine Troubles. G. Nevil-Thomas. Calls attention to some troubles met with in the writer's experience. 1000 w. *Elec Rev*, Lond—Feb. 22, 1907. No. 82827 A.

Actual Turbine Results—Report of the Condition of Turbines after a Year of Use—Steam and Coal Consumption in Actual Service. A report submitted by B. S. Josselyn on the condition and performance of the turbines at the Gould St. power station in Baltimore. Ills. 1500. *Power*—Dec., 1906. No. 80998 C.

Tests of a 2000 Horse Power Riedler Steam Turbine (Versuche an einer 2000 Pferdigen Riedler-Stumpf-Dampfturbine). F. Rötcher. Describes the turbine which was coupled to a 1400-kw. asynchronous A. C. generator and gives the results of elaborate tests. Ills. 4500 w. Serial. 1st part. *Zeitschrift für Ver Deutscher Ing*—April 20, 1907. No. 84144 D.

A Steam Turbine Economy Test. Reports a test made on a 7,500-kw. Westinghouse-Parsons steam turbine at the Waterside Station, No. 2, of the New York

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Edison Company. 1200 w. Ir Age—Oct. 10, 1907. No. 87538.

The Ideal Condensation for Steam Turbines for Land and Marine Service (Die ideale Kondensation für Land- und Schiffs-Dampfturbinenanlagen). Felix Langen. The first instalment describes various systems of condensation. 1000 w. Serial. 1st part. Zeitschr f d Gesamte Turbinenwesen—April 20, 1907. No. 84162 D.

The Governing of Multiple Vane Steam Turbines (Über die Regelung mehrstufiger Dampfturbinen). H. Jansson. Comprehensive article comparing the salient features of the leading turbines now in use. Illus. Serial. 4 parts. 9300 w. Zeitschrift für das Gesamte Turbinenwesen—Nov. 20, Dec. 10, 20 and 29, 1906. No. 81845 each D.

Steam Turbines with Jet Condensers (Dampfturbinen mit Einspritzkondensation). F. Niethammer. 600 w. Zeitschr für das Gesamte Turbinenwesen—Jan. 10, 1907. No. 82365 D.

Rotation Losses in Steam Turbines. Hans Holzwarth. With chart showing the power required to overcome the windage of blades of various heights when running at various velocities in steam of various densities. 1500 w. Power—Jan., 1907. No. 81462 C.

Application of Steam Turbines to the Propulsion of Vehicles (Beitrag zur Frage der Verwendung von Dampfturbinen für den Antrieb von einzelnen Eisenbahnwagen an Stelle von Elektromotoren). Hans Holzwarth. Ills. Serial. 2 parts. 2400 w. Zeitschrift für das Gesamte Turbinenwesen—Nov. 20 and 30, 1906. No. 81847 each D.

Systematic Symbols in Turbine Design (Einheitliche Bezeichnung im Turbinenbau). Olof Linders. A proposed set of symbols for physical properties, energy, etc. 2400 w. Zeitschr f d Gesamte Turbinenwesen—March 20, 1907. No. 83630 D.

Steam Turbine Theory (Zur Theorie der Dampfturbine). A. Stodola. A mathematical paper discussing, in the first instalment, the influence of variations in speed on the distribution of pressure and on steam consumption. Ills. Serial. 1st part. 4000 w. Zeitschr f d Gesamte Turbinenwesen—June 10, 1907. No. 85641 D.

Remarks on Impulse Steam Turbines (Einiges über Aktionsdampfturbinen). Felix Langen. A mathematical discussion of friction in impulse turbines to determine the most efficient design. 3000 w. Zeitschr f d Gesamte Turbinenwesen—June 20, 1907. No. 85642 D.

Multi-Stage Steam Turbines with Im-

pulse Effect (Mehrstufige Dampfturbinen mit Aktionswirkung). H. Wagner. An illustrated discussion of the action of Rateau and Zoelly turbines. 2000 w. Zeitschr f d Gesamte Turbinwesen—July 10, 1907. No. 86260 D.

Combined Steam Turbines (Zur Frage der Kombinierten Dampfturbinen). W. Jasinsky. A mathematical discussion of turbines constructed partly on the impulse and partly on the reaction principle. Ills. 1600 w. Serial. 1st part. Zeitschr f d Gesamte Turbinenwesen—Aug. 30, 1907. No. 86978 D.

First Rateau Regenerator Installed in America. F. G. Gasche. Description and test of the Rateau low-pressure turbine system at the works of the International Harvester Co., Chicago, Ill. 4000 w. Power—June, 1907. No. 84653 C.

Compounding Piston Engines with Turbines. Prof. A. Rateau. From a paper upon the "Development of Exhaust Steam Turbines" presented to the Soc. of Belgian Engrs., describing the advantages and answering the objections to the system. 5000 w. Power—Oct., 1907. No. 87273 C.

The Utilization of Exhaust Steam by Accumulators and Low-Pressure Turbines (Utilisation des Vapeurs d'Echappement par Accumulateurs et Turbines à Basse Pression). E. Cornez. Describes the system devised by M. A. Rateau, illustrating installations and giving details of working. 4500 w. L'All Indus—July, 1907. No. 86201 D.

Utilization of Exhaust Steam for Power Generation. T. Rich. Concerning exhaust steam turbines and the work for which they are adapted. 1500 w. Ir & Coal Trds Rev—Aug. 9, 1907. No. 86477 A.

Practical Experience with Exhaust-Steam Turbines. Dr. Alfred Gradenwitz. Illustrates and describes successful applications of low-pressure turbines, using exhaust steam, showing the advantages of the system. 3500 w. Engineering Magazine—Nov., 1907. No. 87969 B.

See also Engines, under STEAM ENGINEERING; Tirsimeters, under MEASUREMENT; Turbo-Generators, under ELECTRICAL ENGINEERING, DYNAMOS AND MOTORS; and Central Stations, under ELECTRICAL ENGINEERING, GENERATING STATIONS.

## Turbine Testing

An Oil Fired Boiler for Testing Steam Turbines. F. W. Feiker. Illustrated description of a system well adapted for varying loads. 1000 w. Engr, U S A—July 1, 1907. No. 85372 C.

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### Valve Gears

#### Valve Gears.

Some Leading Types of Valve Gears. Illustrated detailed descriptions of various types. 1600 w. Mech Engr—Feb. 16, 1907. Serial. 1st part. No. 82596 A.

Study of the D Slide Valve. E. S. Hawkins. A study of the practical working of the Zeuner diagram, giving examples with solutions. 3000 w. Power—March, 1907. No. 82657 C.

Guided Valve Gear for Poppet Valves (Zwangläufige Ventilsteuerung mit Flachregler). R. Proell. Analytical discussion of valve arrangements for steam engines. Illus. 4800 w. Zeitschr d Ver-Deutscher Ing—Jan. 26, 1907. No. 82364 D.

Valve Gears for Engines. P. E. Merriam. Illustrates and describes types of valves and valve gears and their adjustment. 1600 w. Engr, U S A—May 15, 1907. No. 84405 C.

Valve Gear for High-Speed Engines. A. Houlson. Investigates the method of determining the correct proportions of cylinders, valves, and valve gear for a modern high-speed vertical enclosed engine. Ills. 2400 w. Mech Engr—May 4, 1907. Serial. 1st part. No. 84336 A.

Connecting Up Valves. William Kavanagh. Shows some incorrect connections and the means by which they can be rectified. Ills. 1200 w. Elec Wld—April 6, 1907. No. 83502.

Adjusting Stephenson Valve Gear. James Kennedy. Detailed directions for the adjustment with related information. Ills. 2500 w. Ry & Loc Engng—March, 1907. No. 82700 C.

How to Set a Riding Cut-off Valve. Hubert E. Collins. An illustrated article giving the principal points which engineers ought to know about the action of the well-known Meyer valve. 4000 w. Power—June, 1907. No. 84651 C.

Single-Eccentric Meyer Valve Gear. H.

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V. Haight. Drawings and description of a valve gear in which both main and cut-off valves are driven from a single eccentric. 500 w. Am Mach—Vol. 30, No. 9. No. 82667.

A New Form of Automatic Assistant Cylinder for Valve Gears. Luther D. Lovekin. Illustrated description of the improved "assistant cylinder" for valve gears designed by the writer. 900 w. Jour Am Soc of Nav Engrs—Feb., 1907. No. 83773 H.

Recke-Ruston Positive Valve-Gear. Brief description, with 2-page plate. 600 w. Engng—Sept. 27, 1907. No. 87522 A.

Direct-Leakage of Steam Through Slide Valves. J. V. Stanford. Gives results of some experiments made to determine some facts in connection with leakage of slide valves. 1500 w. Jour Fr Inst—Dec., 1906. No. 80945 D.

#### Valves.

Fitting a Throttle Valve. Suggestions for the careful grinding of the valve and the fitting of the throttle rod and attachments. 800 w. Ry & Loc Engng—July, 1907. No. 85429 C.

Tests of Isolating Valves for Steam-Pipes. A brief account of tests made in Germany, taken from Dr. Koehler's illustrated monograph. 1600 w. Engng—July 19, 1907. No. 85993 A.

#### Water Hammer.

The Principal Investigations of Water Hammer, with Especial Reference to Those of Prof. N. Joukovsky (Notice sur les Principaux Travaux Concernant le Coup de Bélier et Spécialement sur le Mémoire et les Expériences du Prof. N. Joukovsky, 1898). M. Goupil. A historical, mathematical review of the theory of water hammer. Ills. 8000 w. Ann d Ponts et Chaussées—Part I, 1907. No. 85604 E + F.

## MISCELLANY

### Aeronautics.

Aerial Navigation. Major B. F. S. Baden-Powell. Considers the importance of the subject, discussing some of the general principles of aerodynamics, and stating facts in regard to recent machines. Also discussion. 7000 w. Jour Soc of Arts—April 19, 1907. No. 83982 A.

The Problem of Flight and the Resistance of the Air (Le Problème de l'Aviation et la Résistance de l'Air). E. Malleire. The first part of the serial begins

a theoretical discussion of the mechanics of aerial navigation. Ills. 4800 w. Serial. 1st part. Génie Civil—Aug. 10, 1907. No. 86926 D.

The Future of Aerial Navigation (Die Zukunft der Luftschiffahrt). Georg Wellner. Describes several types of air ship and outlines the mathematical principles on which the design and construction of a successful air ship must be based. Diagrams. 4000 w. Zeitschr d Oest Ing u Arch Ver—April 26, 1907. No. 84181 D.



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The Aeroplane Experiments of M. Louis Bleriot. Capt. Ferber. An illustrated résumé of what has been accomplished to date in France with aeroplanes of various types, including that invented by Prof. Langley. 2200 w. *Sci Am Sup*—Sept. 14, 1907. No. 86897.

Aerial Locomotion. A brief review of the work of past experimenters and the present work in this field. 3500 w. *Engng*—Dec. 14, 1906. No. 81247 A.

The Conquest of the Air. Bernard Meiklejohn. A review of what has been accomplished with balloons, dirigible airships, aeroplanes and the helicopter. Ills. 5700 w. *World's Work*—Dec., 1906. No. 80850 C.

Experiences in Balloons. Dr. Julian P. Thomas. An illustrated report of the personal experiences of the writer who makes many ascensions from New York. 2500 w. *World's Work*—Dec., 1906. No. 80849 C.

The Wellman Polar Airship Expedition. Illustrates and describes the arrangements made for the expedition. 2500 w. *Sci Am*—June 22, 1907. No. 85161.

To the North Pole in a Dirigible Balloon (Au Pole Nord en Ballon Dirigeable). Lieut. Graham. An illustrated description of the balloon in which Wellman will make his second attempt to reach the Pole during the present year. 800 w. *Génie Civil*—June 8, 1907. No. 85615 D.

Captive Balloons in the German Army and Navy. Dr. Alfred Gradenwitz. Gives an illustrated description of the improved type of balloon now being used, and an account of experiments recently made in locating submarine boats. 1500 w. *Sci Am*—July 13, 1907. No. 85518.

Aerial Navigation in Marine Service (L'Aeronautica al Servizio della R. Marina). Ettore Cianetti. A discussion of the possibility of using balloons, etc., in naval warfare. 3300 w. *Rivista Marittima*—Sept., 1907. No. 87662 E + F.

The Use of Hydrolith for the Inflation of Balloons. Dr. G. F. Jaubert. Information in regard to this chemical compound and its manufacture. 1000 w. *Sci Am*—Aug. 3, 1907. No. 86063.

Dirigible Airships. Count von Zeppelin. Discusses the design and propulsion of airships. 4000 w. *Sci Am Sup*—Dec. 22, 1906. No. 81088.

The Flights of Zeppelin's Airship on October 9 and 10, 1906. An illustrated account of these trials. 1600 w. *Sci Am Sup*—Feb. 23, 1907. No. 82580.

A German Dirigible Air Ship: the "Zeppelin" (Un Dirigeable Allemand: le "Zep-

pelin"). G. Espitalier. Describes the ship and a series of elaborate tests to which it was recently subjected. Ills. 2000 w. *Génie Civil*—July 6, 1907. No. 86210 D.

Progress in Airships. Forms of Gas Bags. Carl E. Myers. Points out defects in the construction of gas bags and reviews some experiments in aeronautics made by the writer. 1600 w. *Sci Am Sup*—Feb. 9, 1907. No. 82180.

Recent Progress in Aërial Navigation. J. D. Fullerton. A discussion of dirigible ballooning, or navigation by machines lighter than air, and aviation, or navigation by machines heavier than air, giving a list of journals containing useful information on aërial navigation. Ills. 17800 w. *Jour Ry U S Inst*—Jan., 1907. No. 82048 E.

The First British Military Airship. Harold J. Shepstone. Illustrations, with description and general information. 1500 w. *Sci Am*—Oct. 5, 1907. No. 87472.

The First British Military Airship. Illustrations of the "Nulli Secundus" and report of its trial. 1500 w. *Auto Jour*—Sept. 14, 1907. No. 78176 A.

The Parseval Dirigible Airship. Dr. Alfred Gradenwitz. Illustrated description, with general remarks on airships. 1500 w. *Sci Am*—Nov. 10, 1906. No. 80273.

Recent Airship and Aeroplane Experiments in Europe. Illustrates and describes recent craft and gives reports of flights attempted and attained. 3300 w. *Sci Am*—Dec. 22, 1906. No. 81086.

The de la Vaulx Airship. Illustrated detailed description. 1000 w. *Sci Am Sup*—Jan. 5, 1907. No. 81381.

The Development of the Air-Ship Motor (Die Entwicklung der Motor Aëronautik). Walter Oertel. Description of a large number of aeronautic motors. Serial. 4500 w. First part. *Zeitschr d Mitteleuropäischen Motorwagen Vereins*—No. 5, March, 1907. No. 83655 D.

Aeroplanes and Propellers. Some valuable suggestions given by Patrick Alexander in a lecture before the Aero Club. 2500 w. *Auto Jour*—Dec. 29, 1906. No. 81519 A.

Aërial Locomotion with a Few Notes of Progress in the Construction of an Aërodrome. Alexander Graham Bell. An address before the Washington Acad. of Sci. An illustrated review of work accomplished with flying machines, especially the writer's experiments with kites. 8500 w. *Nat Geog Mag*—Jan., 1907. No. 82046 C.

The Use of the Gyroscope in the Bal-

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ancing and Steering of Aeroplanes. Robert H. Goddard. Describes an apparatus and its application to aeroplanes, explaining the controlling action. Ills. 700 w. Sci Am Sup—June 29, 1907. No. 85318.

The Problem of Flight and Its Solution by the Aeroplane (Le Problème de l'Aviation et sa Solution par l'Aéroplane). J. Amengaud. Discusses the principles of air-ship design and reviews the work of Santos-Dumont, Ponton, Renard, and many other inventors and experimenters. 9500 w. Bull Soc d'Encour—July, 1907. No. 86917 G.

The Tani Aeroplane Model. Illustrated detailed description of an original idea for obtaining mechanical flight. 1500 w. Auto Jour—Feb. 16, 1907. No. 82586 A.

The Ader "Avion." From the French of Maurice Degeorge in *L'Automobile*. Reviews the experiments made by M. Ader, illustrating his inventions. 1500 w. Sci Am Sup—Dec. 1, 1906. No. 80738.

Genesis of the First Successful Aeroplane. Editorial on the work of the Wright brothers of Dayton, Ohio. 1200 w. Sci Am—Dec. 15, 1906. No. 80972.

An Interesting German Flying Machine. Dr. Alfred Gradenwitz. The machine developed by J. Hofman, of Berlin, is illustrated and described. 1500 w. Sci Am—March 23, 1907. No. 83152.

New French Aeroplanes. Illustrates and describes Santos Dumont's new aeroplane, and M. Delagrange's aeroplane. 1500 w. Sci Am—March 30, 1907. No. 83297.

Santos Dumont's Combined Aeroplane and Airship. An illustrated account of experimental work near Paris. Refers briefly to recent work of other experimenters. 1400 w. Sci Am—July 6, 1907. No. 85411.

Capt. Ferber's Aéroplane Experiments. Illustrates the apparatus and describes the experiments of this French aéronaut. 900 w. Sci Am—April 13, 1907. No. 83579.

Aeroplane Model Trials. An illustrated account of the competitive trials at the Alexandra Palace, April 15, 1907. 2200 w. Auto Jour—April 20, 1907. No. 83985 A.

The Gammeter Orthopter—A Beating-Wing Flying Machine. H. C. Gammeter. Illustrated description. 1000 w. Sci Am—Oct. 12, 1907. No. 87555.

New European Flying Machines. Illustrates and describes a number of machines recently brought out. 1700 w. Sci Am—Oct. 26, 1907. No. 87880.

The Second Annual Exhibition of the Aero Club of America. Brief illustrated descriptions of some of the interesting

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exhibits. 2300 w. Sci Am—Dec. 15, 1906. No. 80975.

The Aero Club's Exhibit at the Agricultural Hall. Illustrates and describes some of the models shown. 2500 w. Auto Jour—April 13, 1907. Serial. 1st part. No. 83865 A.

Aeronautics in Foreign Countries (L'Aéronautique à l'Etranger). G. Espitallier. Describes the section devoted to aeronautics at the Milan Exposition in 1906 and discusses the experiments being carried on in the Italian Army. Ills. 2800 w. Génie Civil—May 4, 1907. No. 84907 D.

The International Kite Ascensions. S. P. Fergusson. An illustrated account of the work in meteorological aeronautics carried out by the International Commission. 2000 w. Sci Am—Aug. 10, 1907. No. 86302.

An Aeronautical Observatory. Dr. Alfred Gradenwitz. Illustrated description of an institution recently erected in the Prussian province of Brandenburg. 1500 w. Sci Am Sup—July 13, 1907. No. 85520.

See also Gasoline Engines, under COMBUSTION MOTORS; and Air Resistance, under MEASUREMENT.

## Art Smith.

An Art Smith and His Work. Principally an account of the work of Louis Van Boeckel, at Lier, near Antwerp. Ills. 1800 w. Am Mach—Vol. 29. No. 49. No. 80841.

## Bottle-Making.

The Leistner Bottle-Making Machine. A machine for the manufacture of glass bottles is illustrated and described, and also its operation. 3500 w. Engng—June 7, 1907. No. 85115 A.

## Calculating Machines.

An Ingenious Calculating Machine. Henry J. Kennedy. Illustrates and describes a machine which with any digit multiplier, requires but one turn of the crank to obtain the product. 6000 w. Am Mach—Vol. 29. No. 44. No. 80170.

The Burroughs Adding and Listing Machine. Illustrates and describes an efficient adding machine used extensively in banks and clearing houses. 3500 w. Engng—May 3, 1907. No. 84342 A.

## Cotton Mills.

Electrically-Driven Cotton Mills. Information in regard to the change of power in many of the mills in Lancashire, with editorial on the new mills, equipped with the most modern machinery. Ills. 2700 w. Engng—Jan. 11, 1907. No. 81746 A.

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## Cylinders

Engineering in Cotton Mills. Views of new mills under construction in England, with details of the engines and appliances. 700 w. Engr, Lond—Dec. 28, 1906. No. 81544 A.

Safeguards for Cotton Machinery. From a lately issued Home Office report, by H. S. Richmond, calling attention to dangerous parts of machinery used, and illustrating protective devices which should be used. 2000 w. Engng—Jan. 4, 1907. No. 81649 A.

## Cylinders.

Design of Thick Cylinders. T. A. Marsh. Considers the design of thick cylinders for pressures above 1000-lbs. per square inch, with special reference to hydraulic press cylinders. 1000 w. Mach, N Y—July, 1907. No. 85483 C.

## Dynamics.

On Simplicity of Method in Elementary Dynamics. E. V. Huntington. Gives easily remembered working rules or principles, showing, by examples, how ordinary problems can be solved by reference to them. 2200 w. Harvard Engng Jour—Jan., 1907. Serial. 1st part. No. 82620 D.

## Eighteenth Century.

Mechanical Masterpieces of the Eighteenth Century. Dr. Alfred Gradenwitz. An account of the work of Pierre Jaquet-Droz and his son, Henri Louis. Illustrates and describes three famous automats. 1600 w. Sci Am—June 22, 1907. No. 85162.

## Energy.

Reflections on Energetics (Réflexions sur l'Energétique). V. Dwelshauvers-Dery. A theoretical discussion of energy in general and a comparison between gravitation energy and heat energy. 8000 w. Rev de Mécanique—Nov. 30, 1906. No. 81127 E + F.

Conversion of Energy and Dynamics of Muscular Force. J. E. Siebel. A review of the fundamental laws of heat energy and its conversion into motion; the animal organism as a basis for study of electrical energy; energy conversion by means of electric battery that has its counterpart in the muscular system. Ills. 3200 w. Ice & Refrig—Feb., 1907. No. 82120 C.

Methods for Determining the Equivalence Between Heat and Work. (Ueber die Methoden zur Bestimmung der Aequivalenz von Wärme und Arbeit). Theodor Gross. History of methods, the principles on which they rest and the conclusions to be drawn therefrom.

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Serial. 1st part. 2000 w. Elektrochem Zeitschr—Dec., 1906. No. 81121 G.

The Energy Problem of the Universe. A. H. Gibson. Considers the forms which the prime mover has passed through and those to which evolution may ultimately tend, the present known sources of energy, etc. 6000 w. Cassier's Mag—Sept., 1907. No. 86612 B.

## Equilibrium.

The Equilibrium of Least Stability in a Non-Rigid System (Sull' equilibris di minima stabilità dei sistemi deformabili). A. Ciappi. Mathematical paper, diagrams. 5300 w. Annali della Societa degli Ingegneri e degli Architetti Italiani—No. 2, 1906. No. 82313 D.

## Flame.

Flame Problems and Chemical Science. Prof. A. Smithells. Abstract of president's address to the Chemical Section of the British Assn. Gives a summary of the present state of knowledge with discussion of the subject in general. 6000 w. Engng—Sept. 13, 1907. No. 87215 A.

## Glass Manufacture.

The First Machine for the Commercial Production of Window Glass by the Sheet Process. An illustrated article describing the manufacturing methods that have been employed and an invention of Irving W. Colburn for drawing glass of any reasonable width and of desired thickness, surface and polish. 2500 w. Sci Am—Dec 1, 1906. No. 80736.

## Guns.

A New Vickers Automatic Rifle-Calibre Gun. Illustrates and describes a new Vickers gun intended for naval and field use. 4500 w. Engng—Jan. 25, 1907. No. 82154 A.

The Dynamics of Long Recoil. A. G. Greenhill. Mathematical discussion of an ideal case, showing the nature of the calculation required in the production of a new design of long recoil. 3000 w. Engr, Lond—Aug. 23, 1907. No. 86740 A.

## Gyroscope.

The Gyroscope. C. M. Broomall. From the Pro. of the Delaware Co. Inst. of Science. An explanation of the action of the gyroscope without mathematics. 5000 w. Sci Am Sup—Aug. 10, 1907. No. 86304.

## Index.

A Mechanical Engineering Index. W. W. Bird and A. L. Smith. Explains the building of a comprehensive Mechanical Engineering Index with a minimum of time. In use at the Worcester Polytechnic Institute. 7000 w. Pro Am Soc of Mech Engrs—Nov., 1906. No. 80526 D.

## MECHANICAL ENGINEERING

### Inflammable Liquids

#### Inflammable Liquids.

Storage of Inflammable Liquids (*Die Lagerung feuergefährlicher Flüssigkeiten*). Herr Reichel. Methods described for storing benzine and gasoline so as to diminish fire risk. Illus. 3600 w. *Zeitschr d Mit Motorwagen Ver*—No. 24, Dec., 1906. No. 82308 D.

#### Injuries to Vegetation.

Search for the Causes of Injury to Vegetation in an Urban Villa Near a Large Industrial Establishment. Persifor Frazer. Describes the investigation made and gives the conclusions. Also a bibliography of treatises on injuries to vegetation by furnace gases. 28000 w. *Bul Am Inst of Min Engrs*—May, 1907. No. 85270 D.

#### Jute Machinery.

Observations on Present-Day Practice in Jute Preparing and Spinning. D. J. Macdonald. Describes a new method of driving the spindles with the view to saving power, changes in pressing rollers, transmission gear, etc. Ills. 2500 w. *Inst of Mech Engrs*—July, 1907. No. 86356 N.

#### Kinematica.

Newman's Kinematic Apparatus for the Study of Mechanism. Illustrates and describes apparatus designed to facilitate the investigation and illustrate the properties of valve gears, straight-line motions, etc. 2500 w. *Engng*—Dec. 28, 1906. No. 81534 A.

The Newman Kinematic Apparatus. Illustrates and describes a contrivance which simplifies the study of mechanisms. 1000 w. *Sci Am Sup*—Aug. 24, 1907. No. 86518.

#### Laboratories.

The New Engineering Laboratory at the City and Guilds of London Institute, Finsbury. Prof. E. G. Coker. Illustrated description. 1500 w. *Engng*—Aug. 16, 1907. No. 86599 A.

The New Engineering Building and Equipment of the University of Pennsylvania. Illustrated detailed description. 4500 w. *Pro Engrs' Club of Phila*—Jan., 1907. No. 82549 D.

#### Liquid Air.

Machines for the Making of Liquid Air (*Les Machines pour la Liquéfaction de l'Air*). H. Demierre. General discussion of the problem of liquifying air and description of the Linde and Hampson machines. Ill. 2600 w. *Bull Tech d l Suisse Rom*—April 10, 1907. No. 83674 D.

The Liquefaction of Gases. Roger Baldwin Colton. Brief review of the

### MISCELLANY

progress made and the methods used. Ills. 1500 w. *Yale Sci M*—April, 1907. No. 83919 C.

The Commercial Liquefaction of Air and the Extraction of Oxygen from the Atmosphere (*La Liquéfaction Industrielle de l'Air et l'Extraction de l'Oxygène de l'Atmosphère*). E. Mathias. A description of various processes and machines. Ills. 11700 w. *Rev Gen des Sciences*—Sept. 15, 1907. No. 87606 D.

The Manufacture of Oxygen. An account of the plant of the British Oxygen Company, with illustrations, especially describing the Linde liquid-air plant installed. 2000 w. *Engng*—April 19, 1907. No. 84001 A.

#### Mechanics.

The Lack of Clearness in Some of the Fundamental Principles of Theoretical Mechanics (*Mangelnde Klarheit in einigen Grundbegriffen und Principien der Theoretischen Mechanik*). Karl Rudolf. The first part discusses the theory of rotating bodies with reference to centrifugal force. Ills. 2700 w. *Serial. 1st part. Elektrotech u polytech Rundschau*—April 10, 1907. No. 84169 D.

#### Memoranda.

Memoranda for Engineering Data. T. S. Avelly. Gives specimen result tabulations, which may be amplified to suit any conditions. 700 w. *Prac Engr*—Nov. 9, 1906. *Serial. 1st part. No. 80472 A.*

#### Metal Evaporation.

The Evaporation of Solid Metals and Their Compounds. Describes method of demonstrating. 1000 w. *Sci Am*—Apr. 6, 1907. No. 83455.

#### Minting Machinery.

Minting Machinery. Illustrates and describes machinery made for the Royal Mint, at Ottawa. 8000 w. *Engr, Lond*—Sept. 27, 1907. No. 87532 A.

#### Moments of Inertia.

A Diagram for Calculating Moments of Inertia. O. A. Thelin. Gives a diagram designed to simplify calculations relative to moments of inertia of sections, explaining its use. 600 w. *Am Mach*—Vol. 30, No. 33. No. 86379.

#### Needle Machine.

Automatic Needle-Making Machinery. Photographs and description of an interesting machine for finishing sewing machine needles after they have been shaped. 1200 w. *Mach, N Y*—Aug., 1907. No. 86141 C.

#### Paper Making.

Paper Making by Electric Power.

## MECHANICAL ENGINEERING

### 1906 Review

Illustrated description of a remodeled plant at Hartford City, Ind., equipped with a Diesel oil engine driving direct an alternating-current generator. 2200 w. Engr, U S A—Dec. 1, 1906. No. 80797 C.

The Stoneywood Paper Works. Illustrates and describes the interesting engineering features of these works, near Aberdeen, Scotland. 3000 w. Engr, Lond—Aug. 16, 1907. No. 86604 A.

### 1906 Review.

Mechanical Engineering. A review of the year confined principally to steam machinery. 6500 w. Engr, Lond—Jan. 4, 1907. No. 81658 A.

### Rotating Discs.

The Stresses in Swiftly Rotating Discs (Die Nebenspannungen in Rasch Umlaufenden Scheibenrädern). A. Stodola. A theoretical and mathematical paper. Ills. 5000 w. Zeitschr d Ver Deutscher Ing—Aug. 10, 1907. No. 86981 D.

Theory of Rotating Disks. (Zur Theorie der rotierenden Scheiben). J. Illeck. Mathematical treatment of the subject. Diagrams. 3300 w. Zeitschrift Des Osterreichischen Ingenieure und Architekten Vereines—Dec. 28, 1906. No. 81805 D.

### Rubber Manufacture.

Manufacture of Mechanical Rubber Goods. An illustrated article describing the reclaiming process, and also the manufacturing methods employed at the Mercer Rubber Co.'s plant in New Jersey. 2500 w. Sci Am—Oct. 5, 1907. No. 87473.

### Seamless Tubing.

An Important Seamless Tubing Decis-

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ion. Gives the decision sustaining the Shelby Steel Tube Co. in regard to the original Stiefel piercing mill. 3500 w. Ir Age—April 4, 1907. No. 83435.

### Shock Phenomena.

Character of the Vibrations due to Shock Deduced from an Examination of Fractures (Caractères des Vibrations Accompagnant le Choc Déduits de l'Examen des Cassures). Ch. de Freminville. Ills. 15000 w. Rev de Métal—Sept., 1907. No. 87604 E + F.

### Stenophile.

A Shorthand-Writing Machine. Dr. Alfred Gradenwitz. Brief description of the machine invented by Bivort, of Paris, to which the name "stenophile" has been given. 500 w. Sci Am Sup—Dec. 1, 1906. No. 80740.

### Sugar.

Machinery of a Beet Sugar Refinery. (Inleiding tot het bezoek aan de fabriek van de Maatschappij voor Landbouwen Beetwortelsuiker-industrie te Zevenbergen) J. C. Dijkhoorn. Comprehensive description of a Dutch beet sugar plant. Ills. 4800 w. De Ingenieur—Nov. 10, 1906. No. 81855 D.

### Telescope.

Equatorial Twin Telescope at the Radcliffe Observatory, Oxford. An illustrated account of this instrument and the tower and dome containing it. 4000 w. Engng—Dec. 21, 1906. No. 81340 A.

### Traction Engine.

A Novel Snow Locomotive. Illustrates and describes a traction engine built for logging service in Wisconsin. 300 w. Ry Age—Nov. 2, 1906. No. 80239.

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### Accidents

#### Accidents.

Falls of Roof and Coal. Recommendations of the Prussian Commission with a view to prevent accidents. 1200 w. Min Wld—March 2, 1907. No. 82757.

Causes and Prevention of Disasters in Mines. G. Farmer. Colliery disasters are especially considered, their causes, and means of lessening the danger. 4400 w. Cassier's Mag—Feb., 1907. No. 82282 B.

The Warrior Run Mine Disaster. Charles Enzian. Describes methods used in combatting a mine fire accompanied by a squeeze and large quantities of explosive gas. 6000 w. Mines & Min—May, 1907. No. 84062 C.

The Prevention of Mine Accidents. Edward W. Parker. Remarks on the dangers, especially in coal mining, and the need of some action in the United States to correct the abuses and causes. 2000 w. Am Min Cong—1906. No. 87372 N.

Prevention of Accidents in Mines. P. J. Slevin. Read before the Connellsville Min. Inst. Discusses some causes of accidents and means for guarding against them. 2200 w. Mines & Min—Oct., 1907. No. 87456 C.

See also Explosions and Rescue Apparatus, under COAL AND COKE.

#### Alberta.

The Coals and Coal Fields of Alberta, Saskatchewan and Manitoba. D. B. Dowling. A résumé of the extent and character of the coals found in these fields. 2000 w. Can Min Jour—April 15, 1907. No. 83796.

#### Analysis.

Coal Analysis from the Commercial Point of View. J. T. Dunn. Outlines the principles of methods of analysis, showing how far the results give the desired information, and gives related matter of interest. 3500 w. Col Guard—May 10, 1907. Serial. 1st part. No. 84441 A.

### COAL AND COKE

#### Anthracite.

New Supplies of Anthracite Coal. W. E. Joyce. A report of some recent discoveries which upset established geological theories. 1500 w. Eng & Min Jour—Aug. 3, 1907. No. 86106.

The So-Called New Supplies of Anthracite. Harry W. Althouse. Showing that recent discoveries do not indicate the existence of coal beds in unexpected places. 3000 w. Eng & Min Jour—Sept. 14, 1907. No. 87008.

#### Austria.

The Mining and Electrical Industry of Dolni Tuzla, Bosnio (Die Montanindustrie und das Elektrizitätswerk von Dolni Tuzla in Bosnien). Franz Poech. Describes the geology of the district, the salt and coal deposits and methods of mining and a generating station which supplies power for the mines and for the town lighting system. Ills. 4000 w. Serial. 2 parts. Zeitschr d Oesterr Ing u Arch Ver—June 21 and 28, 1907. No. 85645 each D.

#### Blasting.

Shot-Firers, and Evils of Solid Shooting. George Harrison. Remarks on the importance of removing the cause of danger, solid shooting, and the effect of large quantities of powder on some coals. 1400 w. Eng & Min Jour—July 27, 1907. No. 85956.

#### Breakers.

Anthracite Breaker of the Pacific Coal Company, Limited, Bankhead, Alberta. Lewis Stockett and B. R. Warden. A description, with drawings and photographs of the building and machinery. 3200 w. Jour Can Min Inst—1906. No. 83817 N.

Breaker of the Pacific Coal Company in Alberta. Lewis Stockett and B. R. Warden. Plan, sections and description of this recently erected breaker for the preparation of anthracite coal. 2700 w. Eng & Min Jour—May 4, 1907. No. 84219.

# MINING AND METALLURGY

## Briquetting

### Briquetting.

Progress in the Briquetting of Coal (Fortschritte im Kohlenstampfverfahren). A. Thau. Describes and illustrates recent machines and processes for this purpose. 4500 w. Glückauf—July 27, 1907. No. 86240 D.

Coal Briquetting in the United States. Edward W. Parker. A report of the present condition of this industry in the different states, illustrating the machines used. 11400 w. Bul Am Inst of Min Engrs—Sept., 1907. No. 87729 D.

A Brief Record of Progress in Fuel Briquette Manufacturing at Detroit. W. S. Blauvelt. 2000 w. Am Gas Lgt Jour—Sept. 23, 1907. No. 87184.

### British Coalfields.

The Hidden Coal Fields of the Midlands. Prof. C. Lapworth. Abstract of a paper before the S. Staffordshire & Warwickshire Inst. of Min. Engrs. Describes the geology of this region, and gives the conclusions from facts based on research, discussing the prospect of production from the commercial point of view. 4000 w. Min Jour—Feb. 23, 1907. No. 82830 A.

The Discovery of the South-Eastern Coal Field. Prof. W. Boyd Dawkins. An account of the discovery of this new coal-field in England, tracing the gradual verification of Godwin-Austen's theory by a series of experiments, and furnishing a striking instance of the value of scientific research. General discussion. Ill. 6500 w. Jour Soc of Arts—March 8, 1907. No. 83095 A.

Geological Research in the Coalfields. Information from the Geological Survey of Great Britain in regard to the work in 1906. 3000 w. Col Guard—Aug. 30, 1907. Serial. 1st part. No. 87072 A.

The Geology of the Coatbridge and Motherwell and Glasgow Districts. Describes these coalfields of Great Britain. 5500 w. Ir & Coal Trds Rev—Aug. 30, 1907. No. 86876 A.

The Dover Coalfield in England. Edward Walker. An illustrated account of the district and the measures taken to work it. 1800 w. Eng & Min Jour—Oct. 12, 1907. No. 87576.

The Thick Coal of Warwickshire. J. T. Browne. Read before the Inst. of Min. Engrs. Deals particularly with the methods of working these coal seams. 1200 w. Ir & Coal Trds Rev—June 14, 1907. No. 85255 A.

### British Collieries.

The Hutton Colliery. Prof. James Tonge. An illustrated description of the large and well-equipped Atherton pits of

## COAL AND COKE

## Charcoal Burning

this English colliery, situated in the Lancashire coal field. 5500 w. Mines & Min—Jan., 1907. No. 81397 C.

Number Four Pit—Brayton Domain Collieries, Cumberland, England. R. P. Cowen. Prize paper. Illustrated description of methods of mining, timbering, lighting, drainage, etc., at this bituminous coal mine. 2500 w. Jour Can Min Inst—1906. No. 83825 N.

The Baggeridge Colliery. James Tonge. An account of the development of a new area of the thick coal of South Staffordshire, England. 2500 w. Mines & Min—Aug., 1907. No. 86100 C.

A Mining Engineer's Notes of a Visit to England (Bergmännische Reisebriefe aus England). Martin Baldauf. The first number of the serial begins a description of some collieries near Cardiff, comparing the methods used with those in use in Germany. Ills. 1600 w. Serial. 1st part. Oest Zeitschr f Berg u Hüttenwesen—Aug. 31, 1907. No. 86946 D.

### British Columbia.

Some Notes on the Economic Geology of the Skeena River. W. W. Leach. From the *Jour. of the Can. Min. Inst.*, Vol X. Explains the rich possibilities of this region, lacking development for need of transportation facilities. Coal and metalliferous deposits have been located. 4000 w. B C Min Rec—Feb., 1907. No. 83783 B.

A New Coal Field in British Columbia. Arthur Lakes Sketches and description of a valuable field of non-coking lignitic-bituminous coal, near the junction of the Similkameen and Tulameen rivers. 700 w. Min Wld—Oct. 5, 1907. No. 87483.

### Canada.

Notes on the Mineral Fuel Supply of Canada. R. W. Ells. Discusses mineral fuels which include other substances than coal, the location of deposits, etc. 1200 w. Can Min Jour—June 15, 1907. Serial. 1st part. No. 85217.

### Cape Breton.

Submarine Coal Mining in Cape Breton. W. P. Deppe. An illustrated article giving a short description of the workings of the Mabou mines. 1400 w. Ry Age—Feb. 22, 1907. No. 82561.

### Charcoal Burning.

Composition of Gas Given Off in Charcoal Burning (Gasverhältnisse bei der Holzverkohlung). Eduard Juon. Gives the results of elaborate experiments carried out in Russia. Tables. Serial. 2 parts. 6300 w. Stahl u Eisen—May 22 and 29, 1907. No. 84940 each D.

# MINING AND METALLURGY

## China

## COAL AND COKE

## Coal Mining

### China.

Coal Deposits and Methods of Mining in China. Eliot Blackwelder. A sequel to a review of the geology and early development of coal mines in China. 1100 w. Min Wld—Nov. 24, 1906. No. 80598.

Coal Mining in China. Noah Fields Drake. An account of the crude methods still used for mining, and a discussion of the various mines being developed. Ills. 1800 w. Min Wld—Feb. 16, 1907. No. 82446.

### Classification.

The Classification of Coals. S. W. Parr. Read before the Am. Chem. Soc. Considers the factors of composition which should be taken into account to obtain a practical and scientific classification. 2500 w. Mines & Min—Dec., 1906. No. 80758 C.

### Coal-Cutting.

Economies of Coal Mining by Machine. George Farmer. A summary of the economies claimed to be effected by machine mining. 700 w. Min Rept—June 13, 1907. No. 85081.

Electrical Coal-Cutting by Bar Machines, with Special Reference to the "Simplex" Machine. Arthur Hall. Read before the Nat. Assn. of Col. Mgrs. The discussion is confined to bar machines, stating their advantages over disc machines, and illustrating and describing the Goolden machine and "Simplex" and the "Hurd." 8000 w. Ir & Coal Trds Rev—March 1, 1907. No. 83005 A.

Experience with Coal-Cutting Machinery in the Dortmund District (Neuere Erfahrungen mit Maschineller Schrämarbeit in den Dortmunder Bergrevieren). E. Reinke. Descriptions of mining machines and operations. Ill. 4500 w. Glückauf—Oct. 20, 1906. No. 81106 D.

Pneumatic Coal-Boring Machines and Tools. W. Lynch. Read before the Inst. of Min. Engrs. Brief review of the classes of pneumatic tools used for this work and the results. 1400 w. Min Rept—Jan. 24, 1907. No. 82008.

### Coal Mining.

Large Coal Mine Outputs. F. C. Keighley. A paper read before the Coal Mining Inst. of America. Discusses whether it pays to design and develop coal mines for very large outputs, and some of the causes that fix the limits. 3000 w. Mines & Min—March, 1907. No. 82760 C.

Early Coal Mining in the Lackawanna Valley. William H. Richmond. A history of the development of the mining

and transportation industries. 2000 w. Mines & Min—Feb., 1907. No. 82111 C.

Coal, Origin, Formation, and Methods of Mining. P. Y. Cox. A short paper followed by an illustrated description of an underground trip and of other features of coal mining in Pennsylvania. 4000 w. Pro Ry Club of Pittsburgh—Nov., 1906. No. 82490 C.

Removing Pillars in Coal Mines. William Hardy. Abstract of a paper read before the Coal Min. Inst. of America. Treats of the removal of pillars underlying surface waters, and the successful filling of worked out areas, cribbing, and the management of water. 2500 w. Min Wld—March 9, 1907. No. 82856.

Rib Drawing in the Connellsville Coke Region. G. S. Baton. Describes methods adapted to mining thick seams under moderately heavy cover. 1000 w. Mines & Min—July, 1907. No. 85423 C.

The Panel Retreating System. S. J. Jennings. Describes an adaptation of the panel system for mining thin seams of anthracite, giving comparative costs of three systems of working. 2500 w. Mines & Min—July, 1907. No. 85418 C.

Our Coal. F. Z. Schellenberg. Describes the bituminous deposits of Western Pennsylvania, the methods of mining, ventilation, and related matters of interest. Also discussion. 7500 w. Pro Engrs' Soc of W Penn—Jan., 1907. No. 82045 D.

Mining Coal. Lee C. Moore. Gives some of the details of operation of a company producing more than 17,000,000 tons of coal per annum. General discussion. 6000 w. Pro Engrs' Soc of W Penn—June, 1907. No. 85722 D.

Working Flat and Pitching Anthracite Seams. M. S. Hachita. Illustrates and describes methods of development. 2500 w. Eng & Min Jour—July 6, 1907. No. 85453.

A Single-Room System of Mining. H. S. Gay. Read before the Coal Min. Inst. of America. Explains an adaptation of the Longwall method to work in thick seams. Ills. 3300 w. Mines & Min—Feb., 1907. No. 82115 C.

Mining Anthracite by Longwall. Describes an application of the method under conditions rendered difficult by previous working above and below. Ills. 1700 w. Mines & Min—April, 1907. No. 83394 C.

The Effects of Roof Pressures in Longwall Workings. Henry Briggs. Describes methods of taking advantage of them to bring down the coal without blasting. Ills. 3000 w. Mines & Min—April, 1907. No. 83395 C.



## MINING AND METALLURGY

### Coal Mining

The Breaking Down of Undercut Ledges of Coal by Hydraulic Pressure in the Saar District (Hereingewinnung Unterschrämter Kohlenstösse mittels Hydraulischer Sprengarbeit auf Gruben des Saarbezirks). W. Mentzel. Illustrates and describes the method and the hand pump with which the hydraulic pressure is applied, giving costs. 3500 w. *Glückauf*—Aug. 3, 1907. No. 86937 D.

See also Blasting, China, Coal Cutting, Colorado, Crushing Strength, Electric Power, Explosives, Gas Power, Germany, Haulage, Illinois, India, Indiana, Kentucky, Michigan, Mine Roofs, New Mexico, Ohio, Pennsylvania, Pipe Lines, Rescue Apparatus, Surveys, Ventilation and Waste, under COAL AND COKE.

### Coal Storage.

Under Water Coal Storage. Illustrated description of the arrangements made by the Western Electric Company of Chicago. 600 w. *Ry & Loc Engng*—April, 1907. No. 83533 C.

### Coal Washing.

Some Principles of Coal Washing. Classifies and discusses the impurities found in coal and methods of removing them; the significance of settling laws with reference to coal-washing; coal-washing devices, etc. Ills. 6000 w. *Can Min Jour*—May 15, 1907. No. 84401.

Process of Coal Washing. Samuel Diescher. States the impurities found in coal, and gives the theory of the process of washing, illustrating and describing various devices used, and giving information relating to their operation. 5500 w. *Pro Engrs' Soc of W Penn*—June, 1907. No. 85720 D.

Modern Methods of Washing Bituminous Coal. Floyd W. Parsons. Explains how washing has made possible the mining of coal containing impurities, and illustrates and describes a modern washing plant. 1500 w. *Eng & Min Jour*—July 6, 1907. No. 85451.

Bituminous Coal Washing. G. R. Delamater. Shows the wonderful growth of the bituminous coal industry, discussing methods of removing impurities, conditions of mining, testing, etc. 6000 w. *Mines & Min*—Aug., 1907. Serial. 1st part. No. 86095 C.

Description of Washing Plants in Operation. W. G. Wilkins. Describes complete washing plants, including not only the washing machines, but also the breaking, crushing, and coal-handling plants. Discussion. Ills. 4500 W. *Pro Engrs' Soc of W Penn*—June, 1907. No. 85721 D.

Coal Screening Plant for the Cawdor

### COAL AND COKE

and Garnant Colliery Company. Drawings and description of the arrangement of a coal screening, crushing, and washing plant, capable of dealing with 40 tons of coal per hour. 1000 w. *Ir & Coal Trds Rev*—Dec. 28, 1906. No. 81549 A.

See also Breakers and Waste, under COAL AND COKE.

### Coke.

The Coke Supply of the United States. Edward W. Parker. A description of present and future sources. Map. 5500 w. *Ir Age*—Feb. 7, 1907. No. 82163.

The Connellsville Coke Supply. L. W. Fogg. Deals with the coal areas and coke supply of Fayette and Westmoreland counties, Pennsylvania. 1200 w. *Ir Age*—March 28, 1907. No. 83294.

Judging Coke from Its Appearance. A Thau. Trans. from *Glückauf*. Illustrates and explains the exterior characteristics of coke, from which the percentage of ash, volatile matters and water may be approximately ascertained, and other information of value. 3000 w. *Ir & Coal Trds Rev*—May 24, 1907. No. 84765 A.

Peat Coke. Max Toltz. Information concerning the deposits of peat, the making of peat coke, the by-products and their use. 3500 w. *Jour Assn of Engng Socs*—May, 1907. No. 85142 C.

The Carbonization of Durham Coking Coal. Andrew Short. Abstract of paper read before the Newcastle Sec. of the Soc. of Chem. Ind. Describes investigations carried out on a battery of patent coke ovens of the Otto-Hilgenstock type. 1800 w. *Ir & Coal Trds Rev*—July 19, 1907. No. 86004 A.

### Coke Drawing.

New Machine for Drawing and Loading Coke. W. M. Nixon. Describes a new device which employs drags or hooks of the usual form operated by means of wire rope and winding drums. 3000 w. *Eng & Min Jour*—July 20, 1907. No. 85844.

### Coke Handling.

The Quenching and Handling of Coke in Gas Works (Extinction et Manutention du Coke dans les Usines à Gaz). A. Thibeault. Illustrates a method of quenching and handling coke by a current of water. 4000 w. *Génie Civil*—Aug. 3, 1907. No. 86924 D.

### Coke-Oven Gas.

See Furnace Gases, under MECHANICAL ENGINEERING, COMBUSTION MOTORS.

### Coke Ovens.

Coke Ovens and Coking. J. Martin

## MINING AND METALLURGY

### Coke Ovens

van Harlingen. An explanation of the method of coking in the bee-hive or round oven with air partially excluded. Ills. 2500 w. Yale Sci M—Nov., 1906. No. 80566 C.

An Innovation in Coke Ovens. Illustrates and describes a new type of oven at the Mt. Braddock plant, near Uniontown, Pa. It possesses unusual features and claims a saving in labor, time, and cost. 1000 w. Ir Trd Rev—Nov. 22, 1906. No. 80551.

Flued Coke Oven Doors. Brief illustrated description of doors designed by T. Beach, which have given success in coking the coal completely right up to the oven door. 500 w. Col Guard—Nov. 23, 1906. No. 80834 A.

New Type of Coke Oven (Die Neusten Koksöfen von Dr. Th. von Bauer Nebst Veraldevorrichtung). O. Simmersbach. Description of an oven lately built near Dusseldorf from designs by von Bauer. Ills. 2800 w. Stahl und Eisen—Dec. 15, 1906. No. 81806 D.

Coke Oven Materials. J. M. McKinley. Read before the Coal Min. Inst. of America. Discusses the behavior of coke-oven brick made of different materials and in varying proportions. 2000 w. Mines & Min—Feb., 1907. No. 82113 C.

Notes on By-Product Coke Ovens with Special Reference to the Koppers Oven. A. Victor Kochs. Read before the Inst. of Min. Engrs. Explains the design and construction of the coke-oven invented by Heinrich Koppers, of Essen, Germany. Ills. 5500 w. Ir & Coal Trds Rev—June 14, 1907. No. 85253 A.

A By-Product Coking Plant at Clay Cross. W. B. M. Jackson. Read before the Inst. of Min. Engrs. Illustrated description of a Simplex By-product Coke oven plant, using a compressor. 3000 w. Ir & Coal Trds Rev—June 14, 1907. No. 85250 A.

### Coking.

The Production of Coke and Its Application in Domestic Fires. Paul Schlicht. Considers the use of bituminous coal, the production of coke, kinds of coke, its application in domestic fires, and illustrates and describes a new method of combustion. Discussion follows. 11000 w. Jour Soc of Arts—May 10, 1907. No. 84431 A.

Coke and Coking Coals. J. Martin van Hartingen. Considers the composition of coals, showing that they vary widely. 1200 w. Yale Sci M—Oct., 1906. Serial. 1st part. No. 80157 C.

Manufacture of Coke from Western Coal. R. S. Moss. Shows the difference

### COAL AND COKE

### Composition

between eastern and western coals, and claims that coke can be made from western coals if work is carried out on established principles. 1200 w. Min Wld—March 16, 1907. No. 83088.

The Manufacture of Coke from Western Coal. R. S. Moss. Suggestions for coking these coals, showing the necessity of using crushed coal and raising the temperature of the oven very rapidly. Ills. 1500 w. Min Wld—Aug. 17, 1907. No. 86446.

Coking Freeport Coals in Preston County, West Virginia. J. B. Hanford. Read before the Coal Min. Inst. of America. Explains the development of the process for making these coals into high-grade coke. Ills. 2500 w. Mines & Min—April, 1907. No. 83398 C.

The Zeigler Process for Coking Peat. Otto K. Zwingenberger. Illustrates and describes a new method being successfully used in Germany. 1500 w. Eng & Min Jour—Jan. 19, 1907. No. 81698.

Advantages of the By-product Coking Process. Ernest Bury. Abstract of paper read before the British Inst. of Gas Engrs. Discusses it mainly as a gas-making apparatus. 3500 w. Min Wld—Sept. 7, 1907. No. 86782.

Coke-Oven Recovery Products in 1906. Reports in regard to sulphate of ammonia, pitch, carbolic acid, naphthas, and benzols. 1800 w. Col Guard—Feb., 1907. No. 82251 A.

### Coking Qualities.

Why Do Some Coals Coke and Others Not? F. C. Keighley. Read before the Coal Min. Inst. of Am. Considers the influence of geological conditions and physical characteristics of the coal upon coking qualities. 6200 w. Mines & Min—Oct., 1907. No. 87455 C.

### Colorado.

Coal Mining in Colorado. J. E. Hanes and F. W. Parsons. Illustrates and describes the methods used in operating the Delagua mine, which is the largest in the state. 2000 w. Eng & Min Jour—Nov. 24, 1906. No. 80587.

The Coals of Routt County, Colorado. Arthur Lakes. Information in regard to this district, the character of the coals, especially considering the Yampa field. Map. 3000 w. Min Wld—June 15, 1907. No. 85084.

### Composition.

The Composition of Coals. Frank F. Grout. Presents a graphical comparison of the chemical analyses of coals, giving classification and application to coals of

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### Crushing Strength

United States. 4500 w. *Ec Geol*—April, 1907. No. 85185 D.

### Crushing Strength.

The Ultimate Crushing Strength of Coal. Joseph Daniels and L. D. Moore. Describes tests made to determine the resisting power of anthracite and bituminous coals, in connection with a study of the size of coal-mine pillars. Ills. 2500 w. *Eng & Min Jour*—Aug. 10, 1907. No. 86335.

### Deposition.

The Maximum Deposition of Coal in the Appalachian Coal Field. George Hall Ashley. The first of a series of three papers dealing with the time interval involved in the laying down of the coal of the Carboniferous. 1700 w. *Ec Geol*—Sept., 1906. Serial. 1st part. No. 80860 D.

### Deposits.

The Coal Deposits of the World. A survey of the existing more or less developed coal-deposits of the world, omitting China. 1200 w. *Ir & Coal Trds Rev*—Aug. 30, 1907. No. 86877 A.

### Eight-Hour Day.

See same title, under INDUSTRIAL ECONOMY.

### Electric Power.

Central Electric Drive for Collieries. Franz Erich Junge. Explains the advantages of the central power system for coal mines and coke-oven plants whether steam or gas engines are used. 3800 w. *Eng & Min Jour*—April 13, 1907. No. 83713.

The Use of Electricity in Anthracite Mining. H. M. Warren. Illustrates and describes modern equipment, comparing its advantages with obsolete methods. Refers particularly to improvements made in the coal-mining department of the Lackawanna Railroad. 1000 w. *Eng & Min Jour*—Feb. 2, 1907. No. 82098.

Use of Electricity in Anthracite Mining. H. M. Warren. Illustrates and describes the equipment of the Woodward mines at Kingston, Penn., an example of an isolated direct-current station. 800 w. *Eng & Min Jour*—March 2, 1907. No. 82692.

Alternating Current in Coal-Mining Operations. George R. Wood. Considers the advantages of this system, costs of installation and operation, equipment of a central plant, and illustrates and describes recently installed plants. 4000 w. *Eng & Min Jour*—July 6, 1907. No. 85448.

Colliery Hoisting, Haulage and Power Systems. Franz Erich Junge. Compares the cost of individual steam-driven hoist

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and power units with that of the central electric power-station system. 4000 w. *Eng & Min Jour*—May 11, 1907. No. 84313.

Electric Power in the Coal and Coke Industry. W. B. Spellmire. Brief account of applications made of electric power and the operations at the Yorkrun plant. 1000 w. *Ir Age*—Sept. 12, 1907. No. 86881.

Some Recent Improvements in the Design of Electric Cables for Collieries. G. G. L. Preece. Read before the Manchester Geol. & Min. Soc. Illustrates and describes the stranded copper conductor, and a new type of cable called "the patent solid three-core bitumen cable." Discussion. 2200 w. *Elec Engr, Lond*—June 21, 1907. No. 85386 A.

Electrically Driven Colliery Pumps. Alfred Gradenwitz. Illustrated description of the electric pumping installation at the Concorde collieries, Belgium. 1200 w. *Eng & Min Jour*—March 9, 1907. No. 82819.

Allis-Chalmers Machinery Used in Coal and Coke Operations. W. B. Spellmire. Brief illustrated description of the York Run plant of the H. C. Frick Coke Co. 1000 w. *Elec Rev, N Y*—Aug. 24, 1907. No. 86547.

Electrical Equipment of the United States Coal and Coke Co. in the Pocahontas Coal Field. George R. Wood. Illustrates and describes the modern methods of mining and handling coal by means of electrical power, in this West Virginia coal field. 4000 w. *Mines & Min*—Dec., 1906. No. 80754 C.

An Alternating-Current Coal-Mining Installation. T. W. Sprague and C. K. Stearns. Illustrated description of a central power station in West Virginia, with high potential transmission and transformers where required. 2500 w. *Eng & Min Jour*—June 8, 1907. No. 84841.

Plant of the Berwind-White Coal Company's No. 40 Mine. Illustrated detailed description of an electrical mine plant in Pennsylvania, with modern coal and labor saving equipment. 2500 w. *Engr, U S A*—April 1, 1907. No. 83383 C.

Electric Installation at the Cambrian Collieries, Limited. Illustrated detailed description of a plant where electricity has been recently introduced. 2000 w. *Col Guard*—July 12, 1907. No. 85869 A.

Electric Power Plant at the Cambrian Collieries. Describes the electric plant installed to furnish power for these collieries in South Wales. 1800 w. *Engr, Lond*—July 5, 1907. No. 85597 A.

Electric Power in Durham Collieries. An

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### Electric Power

illustrated article giving details of the power house equipment and a description of colliery plant. 1500 w. Elec Rev, Lond—April 26, 1907. Serial. 1st part. No. 84246 A.

Electrification of the Lambton Collieries. Illustrates and describes a plant of the alternate-current type. 2400 w. Ir & Coal Trds Rev—May 3, 1907. No. 84350 A.

Electrical Plant of the Dahlbusch Mine. Alfred Gradenwitz. Illustrates and describes the equipment, arrangement and method of operation at a German colliery. 1000 w. Eng & Min Jour—Jan. 12, 1907. No. 81603.

Operation and Equipment of the St. Clair Colliery. Floyd W. Parsons. Outside machine is driven by steam, while underground equipment is electrically driven. Ills. 1500 w. Eng & Min Jour—June 15, 1907. No. 85054.

See also Haulage, under COAL AND COKE; and Electric Hoisting and Electric Power, under MINING.

### Explosions.

Colliery Explosions and Their Causes. James T. Beard. Considers some of the many causes, believing seismic forces to be more important than barometric changes. Ills. 4000 w. Eng & Min Jour—June 1, 1907. No. 84710.

The Relation of Barometric Pressure to Mine Explosions. F. W. Parsons. A suggestion that explosions of gas may be guarded against by attention to meteorological conditions. 1200 w. Eng & Min Jour—Nov. 17, 1906. No. 80440.

Barometric Pressure and Simultaneous Explosions of Gas in European Collieries. M. Mascart. Trans. from *Echo de Mines*. Gives information in regard to the barometric pressure at the time of the explosions at Reden, Germany, and Liévin, France, which occurred nearly simultaneously. Seems to show that a rapid fall of the barometer has an influence. Also editorial. 1500 w. Eng & Min. Jour—June 1, 1907. No. 84711.

Colliery Warnings. A detailed examination of the value of colliery warnings, based upon barometric pressure, with an account of prevalent opinions. 4500 w. Col Guard—Aug. 9, 1907. No. 86465 A.

Colliery Experimental Work of the Geological Survey. Clarence Hall. From a paper read before the Coal Min. Inst. of America. An account of a plan for experimental investigations of explosives, safety lamps, rescue apparatus, and other matters relating to safety in mine work-

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ing. 1200 w. Eng & Min Jour—June 22, 1907. No. 85224.

Wingate Grange Colliery Explosion. Information from the Home Office report of this explosion, which occurred in October, 1906. 5500 w. Col Guard—March 22, 1907. No. 83423 A.

Coal-Dust Explosions in Collieries. James Ashworth. Discusses the influence of water and steam on coal dust, as illustrated in the Wingate Grange disaster. Ills. 2800 w. Cassier's Mag—Oct., 1907. No. 87385 B.

Urpeth Colliery Explosion. A review of Mr. J. B. Atkinson's report on an explosion of firedamp and coal dust, which occurred Dec. 17, 1906. Ills. 5000 w. Col Guard—June 7, 1907. No. 85110 A.

Outbursts of Coal and Gas in the Cock-shead Seam. An account of occurrences at Hanley. Full abstract of F. E. Buckley's paper before the N. Staffordshire Inst. of Min. & Mech. Engrs. Discussion. 2700 w. Ir & Coal Trds Rev—June 7, 1907. No. 85121 A.

Mine Explosions in Illinois. Hon. Richard Newsam. An account of three explosions from excessive use of powder, where neither gas nor coal dust were present. 2000 w. Mines & Min—April, 1907. No. 83401 C.

Courrières Colliery Disaster. Abstract of the report issued from the Home Office on the disaster which occurred at Pas-de-Calais, France, on March 10 of this year. 3800 w. Col'Guard—Oct. 26, 1906. No. 80305 A.

The Courrières Disaster. James Ashworth. A review of the Commissioners' Report on this mine disaster and its probable cause. Ills. 3000 w. Engr, Lond—Nov. 9, 1906. No. 80501 A.

A Lesson from the Courrières Explosion. Robert H. Dundas. The appalling loss of life in this French colliery disaster, leads the writer to advocate the abolishment of all naked lights, even in the non-fiery mines, and suggests improved methods of working. 2800 w. Ir & Coal Trds Rev—Jan. 11, 1907. No. 81756 A.

Comments on the Courrières Mine Disaster (Einige Betrachtungen anlässlich der Katastrophen in Courrières und auf Grube Reden). J. Mayer. Serial. 2 parts. 5900 w. Oesterr Zeitschr f Berg und Hüttenwesen—March 16 and 23, 1907. No. 83658 each D.

The Fire-Damp Explosions at the Reden and Klein-Rosseln Mines in Saarreviere (Die Schlagwetterexplosionen auf den Gruben Reden und Klein-Rosseln im

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Saarreviere). Friedrich Okorn. Discusses their causes and effects. Ills. 3000 w. Serial. 2 parts. Oest Zeitschr f Berg u Hüttenwesen—Sept. 21 and 28, 1907. No. 87618 each D.

See also Mine Dust and Mine Gases, under COAL AND COKE.

## Explosives.

Explosives in Coal Mines. Report of the Departmental Committee on the use of bobbinite. 6500 w. Col Guard—Jan. 18, 1907. No. 81989 A.

Explosives in Coal Mines. Report of the Departmental Committee on bobbinite. 7500 w. Col Guard—April 12, 1907. No. 83878 A.

Inquiry re "Bobbinite" by British Home Office. James Ashworth. Considers the characteristics of various flameless explosives, reporting tests of bobbinite and other explosives. 4800 w. Mines & Min—Nov., 1906. No. 80196 C.

Explosives in Coal Mines. E. J. Deason. A review of the British regulations of the past ten years and of the Woolwich tests. Ills. 6500 w. Ir & Coal Trds Rev—Sept. 20, 1907. No. 87349 A.

The Testing of Safety Explosives (Ueber die Prüfung von Sicherheits-sprengstoffen). Herr Beyling. Discusses the composition of the various classes of safety explosives, the conditions they should fulfil and methods of testing. Tables. 6000 w. Glückauf—Sept. 7, 1907. No. 87620 D.

Government Tests of Safety Devices for Mines. A report of tests to be made by the United States government of the various dynamites and powders, and experiments in rescue work. 1800 w. Sci Am—June 8, 1907. No. 84821.

## Fire Bosses.

Proposed Methods for Supervising Fire Bosses (Vorschläge zur Ueberwachung der Tätigkeit der Wettermänner). Herr Baum. A discussion of the necessity of keeping a strict watch over the fire bosses in coal mines in view of the numerous accidents due to inattention and neglect of duty. Ills. 3500 w. Glückauf—June 22, 1907. No. 85633 D.

## Gas Power.

Economy of Gas Power Plants for Collieries. Franz Erich Junge. Explains the advantages of electric distribution of power from a central gas-engine installation using waste gases and culm. 4500 w. Eng & Min Jour—April 27, 1907. No. 83968.

## Geology.

The Value of Fossil Mollusca in Coal-

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Measure Stratigraphy. John P. Stobbs. Supplementary to an earlier paper. Shows the value of these mollusca in proving where a boring had reached, in proving faults, testing their magnitude, etc. Discussion. 3000 w. Col Guard—Jan. 18, 1907. No. 81988 A.

Palaeontological Methods and Results in Coal Measure Geology. J. T. Stobbs. Abstract of an address before the So. Staffordshire Min. School Old Boys' Soc. 3500 w. Ir & Coal Trds Rev—July 19, 1907. No. 86003 A.

## Germany.

The New Essen and Gelsenkirchen Deposits (Die Neuern Ausschlüsse im Osten der Essener Mulde und des Gelsenkirchener Sattels bis zur Linie Olfen-Lünen). Herr Hilgenstock. A German coal deposit. Illus. Maps. 5300 w. Glückauf—Feb. 2, 1907. No. 83662 D.

The Coal District Northeast of the Ruhr as Disclosed by Borings and Comparison with the Cardiff District (Das Steinkohlenggebiet nordöstlich der Roer nach den Ergebnissen der Tiefbohrungen und verglichen mit dem Cardiff-Distrikt). Drs. Krusch and Wunstorf. The geology of this district, stratigraphy as disclosed by numerous borings and comparison with the South Wales fields. Plates. 8000 w. Glückauf—April 13, 1907. No. 84151 D.

Comparison Between the Roer Coal-field and the Cardiff District. Krusch and Wunstorf, in Glückauf. Map. With descriptive comparison. 1100 w. Col Guard—May 3, 1907. No. 84339 A.

Westphalian Collieries. An illustrated article giving impressions of a two days' visit. 3500 w. Can Min Jour—Sept. 1, 1907. No. 86762.

The Mining Operations on the Lignite Deposits between Kölzig, Weisswasser, Muskau and Templitz in the Niederlausitz with Special Reference to Their Influence on the Prevention of Spontaneous Combustion of the Coal (Der Bergwerksbetrieb auf dem Braunkohlenvorkommen zwischen Kölzig, Weisswasser, Muskau und Teuplitz in der Niederlausitz unter besonderer Berücksichtigung seines Einflusses auf die Verhütung der Selbstentzündung der Kohle. Herr Riegel. Ills. 8400 w. Glückauf—Sept. 7, 1907. No. 87621 D.

## Handling.

Conveyor-System for Loading at the Coal-face. Floyd W. Parsons. Explains this method of operation and its advantages. 1500 w. Eng & Min Jour—May 18, 1907. No. 84423.

The Greaves Coal Face Conveyor.

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Illustrated description of the features of interest in this conveyor of the scraper type. 1100 w. Col Guard—Dec. 7, 1906. No. 81006 A.

Mechanical Conveyors as Applied to Longwall Mining. J. I. Thomas. Describes methods and apparatus employed at Vintondale, Pa. 3500 w. Mines & Min—Nov., 1907. No. 87853 C.

Arrangements for Handling Coal Output. Floyd W. Parsons. Illustrates and describes simple mechanical methods for efficiently handling coal at mines under various conditions. 2200 w. Eng & Min Jour—Oct. 19, 1907. No. 87795.

See also Coke Handling, under COAL AND COKE; and Coal Handling, under MECHANICAL ENGINEERING, POWER AND TRANSMISSION.

## Haulage.

Electric Power vs. Mules for Mine Haulage. M. B. Peltier. Illustrated description of the electric installation at the No. 3 mine of the Peabody Coal Co. in Illinois. Shows an increase in output, and effects a saving of one cent per ton. 1200 w. Eng & Min Jour—March 16, 1907. No. 83078.

Underground Haulage. T. Nevin. Describes endless rope and endless chain haulage systems in use in British coal mines. 2000 w. Min Wld—Feb. 9, 1907. No. 82213.

Endless Rope Haulage. B. Harrison. Gives particulars in regard to the over-tub endless-rope haulage of the Silkstone seam at the West Riding collieries. Ills. 2800 w. Min Wld—April 13, 1907. No. 83724.

Mechanical Haulage Arrangements at the Pit Head of Shaft II. of the Neumühl Mine (Die mechanische Förderungsanlage an der Hängebank von Schacht II der Zeche Neumühl). Herr Stapff. Illustrated detailed description of an arrangement which handles the cars from the cage to their final destination. 2000 w. Glückauf—April 6, 1907. No. 84150 D.

Shunting Railway Wagons by Ropes. James Tonge. Describes the Heckel shunting system, in which the work is done by an endless wire rope which runs parallel to the rails. 900 w. Ir & Coal Trds Rev—May 3, 1907. No. 84349 A.

See also same title, under MINING.

## Illinois.

A Modern Coal Mine. M. F. Peltier. Illustrated description of the equipment and methods of the Illinois Midland Co., at a plant near Springfield. 2200 w. Eng & Min Jour—Dec. 29, 1906. No. 81315

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## Michigan

Mine No. 17, Collinsville, Ill. Illustrates and describes the plans and arrangement of a mine having a capacity of 3,000 tons of coal per day, and the washery for preparing it. 1000 w. Mines & Min—Aug., 1907. No. 86097 C.

Coal Mining in Eastern Illinois. F. W. Parsons. Illustrated description of details of equipment, and methods employed by The Dering Coal Company. 1400 w. Eng & Min Jour—Feb. 16, 1907. No. 82410.

## India.

Coal Mining in India. Information from the annual report issued by W. H. Pickering, chief inspector of mines in India, for the year ending Dec. 31, 1906. 3000 w. Col Guard—Aug. 30, 1907. No. 86868 A.

## Indiana.

Method of Mining in Indiana Coal Fields. Floyd W. Parsons. Illustrated description. Suggests a plan for preventing squeezes due to hard roof and soft bottom. 2000 w. Eng & Min Jour—March 23, 1907. No. 83224.

## Kansas.

The Atchison Mine at Atchison, Kansas. C. M. Young. A brief illustrated description of the deepest bituminous coal mine in the United States. A three-foot bed worked longwall. 1600 w. Mines & Min—July, 1907. No. 85420 C.

## Kentucky.

Mining in Cumberland Gap Coalfield. John Leggett Pultz. Map, with description of this field, the deposits and methods of mining. 3000 w. Eng & Min Jour—April 27, 1907. No. 83970.

Coal Mining in Kentucky. Describes the deposits of both the eastern and western fields, giving statistics of the production, labor employed, etc. 2000 w. Min Wld—Sept. 7, 1907. No. 86783.

## Managers.

The Colliery Manager. William D. L. Hardie. Explains some of the present difficulties to be encountered, the information needed, and the wisdom of keeping an index of articles on subjects relating to the work. 4000 w. Jour Can Min Inst—1906. No. 83814 N.

## Michigan.

Coal Mining in Michigan. George E. Edwards. A report of the coal deposits, methods of mining, development, etc. 2000 w. Min Wld—Feb. 9, 1907. No. 82214.

Coal Mining in Michigan. Lee Fraser. An account of the development and the

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difficulties, method of mining, etc. Maps. 1600 w. Eng & Min Jour—Sept. 28, 1907. No. 87315.

## Mine Dust.

The Dust Danger. W. H. Pickering. Read before the Inst. of Min. Engrs. Considers briefly the sources of coal dust, its danger, methods of remedying, and the difficulties. 1500 w. Min Rept—Dec. 6, 1906. No. 80895.

The Coal Dust Problem. James Ashworth. Gives quotations from the report of W. N. Atkinson, Henry Hall, and Dr. J. S. Haldane on their recent visit to the Westphalian coalfield, with discussion of the question. 4500 w. Engr, Lond—March 15, 1907. No. 83270 A.

## Mine Examination.

Examination of a Large Coal Property in the West. Arthur Lakes. Suggestions for preliminary work to determine the value of property. Ills. 1000 w. Min Wld—July 27, 1907. No. 85967.

See also Prospecting, under COAL AND COKE.

## Mine Fire.

Extinguishing a Mine Fire. William Taylor Heslop. A record of experience in dealing with an underground fire at St. George's Colliery, Natal. 2000 w. Mines & Min—Nov., 1906. No. 80193 C.

Coal Mine Fires. R. V. Norris. Considers the causes, the precautions to be observed, and successful methods of attack. 2500 w. Eng & Min Jour—Feb. 9, 1907. Serial. 1st part. No. 82194.

## Mine Flooding.

Report on the Inundation of Water at Caradog Vale Colliery. From the Home Office report of this disaster which occurred on June 26, 1906. 2000 w. Col Guard—March 22, 1907. No. 83424 A.

## Mine Gases.

The Action of Coal-mine Gases. Richard Lee. Briefly explains the effects of breathing carbon monoxide, fire-damp, and after-damp. 900 w. Eng & Min Jour—Feb. 9, 1907. No. 82195.

Coal Mine Gases and Barometric Pressure. Floyd W. Parsons. Observations on the possibility of concurrent action on the part of mine gases and fluctuations in atmospheric pressure. 1800 w. Eng & Min Jour—March 2, 1907. No. 82691.

The Causes of Sudden Outbreaks of Gas (Zur Theorie der Plötzlichen Gasausbrüche). Alois Becker. A discussion of the causes of sudden outbreaks of gas in coal mines, evolving a theory based on the accompanying phenomena and supported

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by numerous examples. 2000 w. Serial. 1st part. Oesterr Zeitschr f Berg u Hüttenwesen—June 1, 1907. No. 85636 D.

Mine Gases and Methods of Preventing Explosions. H. E. Gray. Discusses gases found in coal mines, their identification and means for preventing accidents. 3000 w. Eng & Min Jour—Oct. 26, 1907. No. 87897.

Carbon Monoxide in Mines. J. T. Beard. Considers its properties and source, the dangers attending it, the percentage that will cause death, tests for determining its pressure, etc. 2200 w. Mines & Min—Jan., 1907. No. 81401 C.

## Mine Inspection.

Coal Mines Inspection in 1906. Digest of the reports of H. M. Inspectors of Mines. 34000 w. Col Guard—July 19, 1907. (Supplement) No. 85989 A.

The Mine Inspection Service of Pennsylvania. An account of its growth, present organization, and the requirements of the law. 4000 w. Mines & Min—April, 1907. No. 83400 C.

Assistant Inspectorship of Mines. Gives papers set to candidates at a recent examination in England. 1800 w. Col Guard—Nov. 30, 1906. No. 80924 A.

## Mine Plants.

A Modern Illinois Coal Plant. An illustrated description of the surface equipment of Mine B of the Saline County Coal Co., near Harrisburg, Illinois. 2000 w. Mines & Min—Oct., 1907. No. 87453 C.

See also Electric Power and Gas Power, under COAL AND COKE.

## Mine Roofs.

Roof-Weights in Mines. H. T. Foster. Read before the Inst. of Min. Engrs. Views from observations in longwall workings, dealing with the movement of the roof, from its first disturbance to the final settling. 2000 w. Col Guard—Sept. 6, 1907. No. 87074 A.

## Montana.

Coal Resources of Montana. Jesse Perry Rowe. Information concerning the coal properties, the quality of the coal, and the output. 1200 w. Min Wld—Nov. 24, 1906. No. 80700.

Montana Coal and Lignite Deposits. J. P. Rowe. An illustrated article describing the location and character of the fuel deposits of this state. 4500 w. Min Wld—Jan. 19, 1907. No. 81714.

Montana Coal Mines. J. P. Rowe. Deals with the principal producing mines, extent of development, methods of mining and handling coal, and the machinery

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## New Mexico

used. 4500 w. Mines & Min—June, 1907. No. 84737 C.

The Montana Coal Situation. R. P. Tarr. Gives the past output, the extent of the deposits, their character and composition. 1000 w. Eng & Min Jour—Sept. 21, 1907. No. 87166.

## New Mexico.

New Development of Coalfields of New Mexico. Edward K. Judd. An illustrated article giving information in regard to the deposits, mine operations, water supply, etc. 1200 w. Eng & Min Jour—July 6, 1907. No. 85449.

## Ohio.

Methods of Working the Coal Seams of Ohio. Floyd W. Parsons. Illustrates and describes mining in the Hocking Valley field, where an overlying stratum of quicksand makes it impossible to rob pillars and permit the surface to cave in. 2000 w. Eng & Min Jour—April 20, 1907. No. 83840.

## Peat.

The Technology and Uses of Peat. C. W. Parmelee. Abstracted from the annual report of the State Geologist of New Jersey. The present number considers peat as a fuel, giving information in regard to its heating power. 1500 w. Sci Am Sup—March 2, 1907. Serial. 1st part. No. 82810.

The Technical Utilization of Bogs (Ein Beitrag zur Technischen Ausnutzung der Moore). N. Caro. Discusses the practicability of using peat as a fuel. 1800 w. Glückauf—July 13, 1907. No. 86237 D.

The Utilization of Peat for Power Purposes with the Recuperation of By-products. An article based on five papers by Dr. A. Frank, with letter and editorial. 5000 w. Elec-Chem & Met Ind—Oct., 1907. No. 87502 C.

The Manufacture of Peat-fuel in Michigan. Francis J. Bulask. Illustrated description of the only "wet process" in use in America, with a brief outline of the industry. 1400 w. Power—Sept., 1907. No. 86671 C.

Organization of the American Peat Society. A report of an organization effected at a meeting at the Jamestown exposition, with abstracts of papers presented. 3000 w. Eng News—Oct. 31, 1907. No. 87993.

See also Coke and Coking, under COAL AND COKE.

## Pennsylvania.

A Brief Study of Social Conditions in the Bituminous Coal Region of Pennsyl-

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## Production

vania. C. L. Fay. Read before the Coal Min. Inst. of America. Discusses briefly the classes of a mining town and their relation to each other, and the remedies for undesirable conditions. 1200 w. Eng & Min Jour—June 22, 1907. No. 85223.

Geology of the Buck Mountain Coal Bed. Harry W. Althouse. Describes this formation in Pennsylvania, and the method of working. Ills. 1200 w. Eng & Min Jour—April 6, 1907. No. 83520.

Workable Coal Seams of Western Pennsylvania. William Seddon. Concerning the Pittsburg coal seam and various seams found below it; the thickness, extent, and comparative value. 1600 w. Eng & Min Jour—Sept. 21, 1907. No. 87165.

Pennsylvania Mines in 1906. An abstract of the report of the Chief of the Department of Mines of Pennsylvania for the year 1906. 4800 w. Mines & Min—Oct., 1907. No. 87460 C.

The North Shaft Mine of the Susquehanna Coal Co., at Nanticoke, Pa. E. E. Winter. Describes the geology of the district, the mining plant and methods of mining, timbering, ventilating, etc. 3000 w. Jour Can Min Inst—1906. No. 83822 N.

See also Coke, under COAL AND COKE.  
Pipe Lines.

Wood versus Iron for Pipe Lines in Coal Mines. John H. Haertter. Shows that wood pipe withstands acid water better than iron, and that the cost of furnishing and laying is about 50 per cent. less. 4500 w. Eng & Min Jour—July 6, 1907. No. 85450.

## Production.

Output and Value of Coal in 1905. Extracted from the "General Report and Statistics Relating to Mines and Quarries." Confined to the countries of the United Kingdom. 1800 w. Col Guard—Nov. 9, 1906. No. 80492 A.

The World's Coal Production and Consumption. Statement from the last report issued by the British Board of Trade. 2500 w. Col Guard—Nov. 30, 1906. No. 80923 A.

Coal in the United States and Other Countries. Edward W. Parker. The production, and the development of the coal mining industry are considered. 3000 w. Mfrs Rec—Jan. 3, 1907. No. 81409.

Mining Statistics. E. W. Parker. Read before the Coal Mining Inst. of America. Statistics in regard to the production of coal, showing the great increase in tonnage in recent years. 1800 w. Mines & Min—Feb., 1907. No. 82112 C.



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### Prospecting

Coal Mining in the United States. A Review of the technology, markets, and history of the industry in 1906. 11000 w. Eng & Min Jour—Jan. 5, 1907. No. 81479.

### Prospecting.

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The O. K. Copper Mine, North Queensland. R. Logan Jack. Report of a recent inspection of this field. 5500 w. *Queens Gov Min Jour*—Jan. 15, 1907. No. 82821 B.

Cloncurry Copper District. Lionel C. Ball. Notes from a report made recently after inspecting this field. 1200 w. *Aust Min Stand*—March 27, 1907. Serial. 1st part. No. 83899 B.

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The McDougall Roasting Furnace. L. S. Austin. Illustrates and describes a McDougall roasting plant and its operation. 1500 w. *Min & Sci Pr*—Aug. 31, 1907. No. 86797.

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Metallic Sulphides in the Tuffs of Santo Domingo. F. Lynwood Garrison. Outlines the geology of Santo Domingo, and describes the copper minerals found in the tuffs, discussing their characteristics and origin. Ills. 5000 w. *Min & Sci Pr*—Sept. 7, 1907. No. 86891.

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Mining and Smelting in Southern Sibe-

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ria. H. E. West. An illustrated account of properties examined, the nature of the deposits of copper, and related matters. 2000 w. *Eng & Min Jour*—March 9, 1907. No. 82817.

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I. The Mutual Relations and Grievances of the Smelting Trust and the Ore Producer. E. M. de la Vergne. Discusses the wrongs and remedies. II. A Response to the Address of Senator E. M. de la Vergne. Franklin Guiterman. Also general discussion. 12000 w. *Am Min Cong*—1906. No. 87368 N.

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The Chief Advances in Copper Smelting in Modern Times. William Gowland. Presidential address. Considers the increase in the production of copper and the means by which it has been brought about. Ills. 10000 w. *Inst of Min & Met*, Bul 31—April 11, 1907. No. 84011 N.

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The Testing of Copper by the Consumer. Explains the electrical test for the determination of the purity of copper, describing the method in detail. Ills. 2000 w. Brass Wld—Jan., 1907. No. 81938.

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Mining the Porphyry Ore of Bingham. Walter Renton Ingalls. An illustrated description of these deposits in Utah, and the methods of mining. Two companies expect to produce about 80,000,000 pounds

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Platinum-Copper Ores in Wyoming. Concerning the complex New Rambler ores and the concentration methods for an economical treatment. Ills. 1700 w. Min Rept—March 7, 1907. No. 82849.

Copper Deposits of Hartville Uplift, Wyoming. Sydney H. Ball. The present number describes the ore deposits. 1700 w. Min Rept—Aug. 8, 1907. Serial. 1st part. No. 86330.

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### Africa

#### Africa.

Gold Mining in West Africa. W. Fisher Wilkinson. Describes the producing mines in the Gold Coast Colony and Ashanti. 1500 w. *Eng & Min Jour*—Jan. 26, 1907. No. 81957.

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Alaska and Its Possibilities. J. T. Cornforth. Read at meeting of the Am. Min. Cong. Information relating to the early history, the gold production, and other metals, the transportation facilities, etc. 1400 w. *Min Rept*—Jan. 10, 1907. No. 81609.

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The Great Treadwell Mines on Douglas Island. Arthur Coe Spencer. Information in regard to the deposits, development, production, geology, etc., of these gold mines. Ills. 1200 w. *Min Wld*—Sept. 21, 1907. Serial. 1st part. No. 87194.

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Deep Leads of Victoria, or the Cainozoic Buried Auriferous River Deposits. H. L. Wilkinson. Deals with the buried auriferous gravel deposits, the principles determining their value from the eco-87236 N.

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The Ancient River Channels of California. George W. Kimble. A short study of this interesting subject. 700 w. *Min & Sci Pr*—June 8, 1907. No. 84865.

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The Vulture Mine, Arizona. C. W. Purington. An illustrated description of this mine and the deposits of gold in schist, with an account of the development. 2500 w. *Min & Sci Pr*—March 9, 1907. No. 83053.

Tombstone, Arizona, Restored. R. B. Brinsmade. An account of the rise and

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fall of this town, new developments at some of the old mines, yielding ore values in gold, silver and lead, application of the cyanide process, etc. Ills. 3800 w. *Mines & Min*—March, 1907. No. 82764 C.

Lead-Silver Deposits of Mowry, Ariz. R. B. Brinsmade. Describes the caving system of mining 80 per cent. of the ore without timbering, the complicated milling, and methods of smelting. Ills. 2500 w. *Mines & Min*—July, 1907. No. 85417 C.

#### Arsenides.

Roasting of the Argentiferous Cobalt-Nickel Arsenides of Temiskaming, Ontario, Canada. Henry M. Howe, William Campbell, and Cyril W. Knight. Gives results of an investigation of their behavior in roasting, aiming to determine the temperature at which the arsenic is most rapidly expelled, the thoroughness of prolonged roasting, the effect of adding charcoal near the end and at the beginning of the roast. 1800 w. *Bul Am Inst of Min Engrs*—Jan., 1907. No. 82511.

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The Treatment of Arsenical Ores. Chester F. Lee. Concerning the Cascade arsenical-gold ores and their treatment. 1200 w. *Can Min Rev*—Feb., 1907. No. 82440 B.

#### Assay Furnaces.

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Some Notes on Assaying. Charles H. Fulton. Notes having some novel features, prepared for use at the South Dakota School of Mines. 1200 w. *Min Wld*—Dec. 22, 1906. Serial. 1st part. No. 81227.

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A Method of Determining Hydrogen Peroxide and Ferrous Salts and Other Reducing Agents. W. E. Mathewson and J. W. Calvin. Reports tests made, giving results obtained with ferrous ammonium sulphate and sodium nitrate. 1000 w. Min Rept—Dec. 13, 1906. No. 81040.

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The Assay of Antimonial Gold Ores. William Kitto. States the methods tested, giving the conclusions from the experiments. 1500 w. Inst of Min & Met—Bul No. 26. Nov. 8, 1906. No. 80563 N.

Some Experiences in Assaying Telluride Ores. J. N. McLeod. Reports assays of ores containing either high percentages of tellurium, or tellurium with other metals, which apparently had a marked effect on the results. 1800 w. Min Wld—May 18, 1907. No. 84411.

Assay of Bullion Containing Selenium. J. E. Clennell. Notes on methods adopted in sampling and assaying bullion at the Redjang Lebong mine, Sumatra. 3000 w. Eng & Min Jour—Dec. 8, 1906. No. 80884.

The Assay of Gold Bars as Conducted in the Author's Assay Office. Arthur C. Claudet. Describes the method in detail. 2200 w. Inst of Min & Met—Bul No. 27. Dec. 13, 1906. No. 81263 N.

Method for Analysis of Gold-Silver Bullion. J. E. Clennell. Describes a rapid method for the approximate analysis of bullion. The elements to be determined are gold, silver, selenium, lead, copper, iron, and zinc. 2500 w. Eng & Min Jour—June 8, 1907. No. 84840.

The Assay of Silver Bullion by Volhard's Method. Ernest A. Smith. Describes this method showing that it is more accurate than the Gay-Lussac method, though not likely to supersede it for commercial bullion assays. 2000 w. Inst of Min & Met, Bul 28—Jan. 10, 1907. No. 82624 N.

The Litharge Method. B. M. Snyder. Gives the writer's experience with the litharge method of fire-assay. 1600 w. Min Rept—Aug. 1, 1907. No. 86111.

The Effect of High Litharge in the Crucible-Assay for Silver. Richard W. Lodge. Shows that the use of a large excess of litharge in the assay of some ores will give results for silver that are uneven as well as low. 1200 w. Bul Am

Inst of Min Engrs—Sept., 1907. No. 87724 C.

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Charlotte Plains Consolidated. Reviews the history and gives an illustrated description of this great alluvial mine in Victoria, and of the methods employed. 4800 w. Aust Min Stand—Oct. 3, 1906. No. 80338 B.

Metallurgical Methods in Western Australia. Ralph Stokes. Describes the processes evolved to extract the ores, illustrating plants and apparatus. 2500 w. Min Wld—Jan. 5, 1907. No. 81464.

Metasomatic Processes in the Gold Deposits of Western Australia. Waldemar Lindgren. Describes the geological aspects of the country, the occurrence of the gold-bearing lodes, and the associated minerals, calling attention to points in the history of these deposits. 2000 w. Min Jour—Feb. 2, 1907. Serial. 1st part. No. 82249 A.

Records and Progress of Kalgoorlie, Western Australia. Ralph Stokes. An illustrated article giving authoritative facts in regard to Kalgoorlie and Coolgardie 1700 w. Min Wld—Nov. 24, 1906. No. 80597.

Individual Records of Kalgoorlie Producers. Ralph Stokes. Review of the profitable producers and their methods of mining. Ills. 1700 w. Min Wld—Feb. 2, 1907. No. 82119.

Labor and Mining Methods in Western Australia. Ralph Stokes. Illustrated account of Kalgoorlie mining practice 2000 w. Min Wld—Dec. 29, 1906. No. 81324.

Mining and Smelting at Mount Lyell. R. C. Sticht. From the annual report of the Zeehan School of Mines. Describes this mining district, the deposits, method of ore excavation, the values being in copper, gold and silver. 3500 w. Min Jour—March 2, 1907. Serial. 1st part. No. 82896 A.

Geology and Mining at Broken Hill. Ralph Stokes. Describes the rocks and ores, and the mining and timbering methods now employed. Ills. 2800 w. Min Wld—Feb. 23, 1907. No. 82564.

Mining at Broken Hill, New South Wales. Ralph Stokes. An account of the methods of mining in this silver-lead district. 3500 w. Min Wld—March 9, 1907. No. 82854.

Metallurgy at Broken Hill, New South Wales. Ralph Stokes. An illustrated account of the treatment of these silver-lead ores, describing the new mill through which 6,000 tons of ore are passed per

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week. 3500 w. *Min Wld*—March 2, 1907. No. 82755.

Ore Dressing at Broken Hill. G. D. Delprat. Part of a presidential address before the Australian Inst. of Min. Engrs. describing the equipment for concentrating and preparing ores for smelting. Ills. 4200 w. *Eng & Min Jour*—Feb. 16, 1907. Serial. 1st part. No. 82408.

Industrial Conditions at Broken Hill. Ralph Stokes. An illustrated account of this silver-lead district, describing the deposits, and giving information concerning the production, development, etc. Ills. 2000 w. *Min Wld*—Feb. 16, 1907. No. 82447.

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The Auriferous Black Sands of California. J. A. Edman. Introductory remarks, with a statement of the origin, distribution and probable values of the heavy black sands on the Pacific Coast, from the standpoint of the miner and metallurgist. 2200 w. *Min Rept*—May 2, 1907. No. 84201.

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The Fraser as a Dredging Field. H. G. Stringer. An account of this river as a gold producer, and the attempts at dredging. Ills. 2200 w. *Min Jour*—March 16, 1907. No. 83269 A.

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Gold Mining at Wei-Hai-Wei, China. W. Denham Verschoyle. Describes an ore deposit and the mining conditions. Ills. 2000 w. *Eng & Min Jour*—Nov. 17, 1906. No. 80439.

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The Geology of the Cobalt District. C. R. Van Hise. Believes the ore deposits to have been produced by two concentrations. A study of this district. 1800 w. *Can Min Jour*—April 1, 1907. No. 83510.

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The Nipissing and Foster-Cobalt Mines. Reginald Meeks. An illustrated description of these silver mines, the methods of mining, character of ore, etc. 2200 w. *Eng & Min Jour*—Feb. 9, 1907. No. 82191.

Method of Smelting Cobalt Ores. Hiram W. Hixon. Describes a proposed system for smelting these ores in Canada, stating the advantages. 900 w. *Eng & Min Jour*—March 2, 1907. No. 82689.

Smelting Cobalt Ores. Hiram W. Hixon. Read before the Can. Min. Inst. Sug-

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### Cobalt

gests a system of smelting these ores, with the object of inducing the smelting in Canada. 1000 w. *Min Wld*—March 30, 1907. No. 83379.

The Cobalt Silver Field as an Industry. Ralph Stokes. The first of a series of articles aiming to give facts in regard to present conditions. Ills. Also editorial. 3500 w. *Min Wld*—Aug. 24, 1907. Serial. 1st part. No. 86571.

A Microscopic Examination of the Cobalt Nickel Arsenides and Silver Deposits of Temiskaming. W. Campbell and C. W. Knight. Gives the results of the application of microscopic methods of examination to the cobalt-nickel silver veins of Temiskaming. Ills. 2500 w. *Ec Geol*—Sept., 1906. No. 80858 D.

Cyanide Tests on Temiskaming Ores. John J. Robertson. Prize paper. A report of tests made and the conclusions. 1800 w. *Jour Can Min Inst*—1906. No. 83-824 N.

See also Arsenides and Ontario, under GOLD AND SILVER.

### Colombia.

The Eocene Gold-Bearing Gravels of Colombia. Francis C. Nicholas. Describes the placer deposits of great wealth which have yielded millions, studying the geological conditions. 2000 w. *Min Wld*—April 20, 1907. No. 83845.

### Colorado.

The Gunnison Gold Belt of Colorado. Arthur Lakes. Brief illustrated description of peculiar features of this region. 1000 w. *Min Wld*—Nov. 10, 1906. No. 80381.

The Gold Prince Mine and Mill. George P. Scholl and R. L. Herrick. An illustrated description of methods of mining on the Sunnyside Lode, the concentrating mill, tube mills, and methods of extraction for low-grade ores. 6500 w. *Mines & Min*—March, 1907. No. 82758 C.

The Maple Leaf Mine, Colorado. Arthur Lakes. Illustrates and describes the peculiar geological formation of this gold-bearing region. 1000 w. *Min Wld*—March 9, 1907. No. 82855.

The Old Hundred Mine and Mill. Illustrates and describes methods of mining huge ore bodies located upon precipitous slopes, and the modern mill and power plant. An illustration of the possibilities of the aerial tramway. 6000 w. *Mines & Min*—April, 1907. No. 83396 C.

Lodes in the Tertiary Eruptions of Colorado. T. A. Rickard. Describes the geology and considers the deposits of gold and silver. Ills. 2000 w. *Min & Sci Pr*—Aug. 10, 1907. No. 86407.

### GOLD AND SILVER

### Cyanide Plants

Some Gold and Tungsten Deposits of Boulder County, Colorado. Waldemar Lindgren. Describes deposits in the southwestern part of the county. 3500 w. *Ec-Geol*—July, 1907. No. 87090 D.

The Joker Drainage Tunnel. R. L. Herrick. An account of this once famous mining region, explaining the causes for the cessation of mining, reviewing the geology and describing the reopening of the mines, tunnel driving, etc. The district contains silver, lead and copper ores and other minerals of value. Ills. 5000 w. *Mines & Min*—May, 1907. No. 84067 C.

### Comstock Lode.

The Reopening of the Comstock. Claude T. Rice. Reviews briefly the past history, describes present conditions, and states the plans for the new development. Ills. 2200 w. *Eng & Min Jour*—Dec. 22, 1906. No. 81212.

Modern Mining on the Comstock. Claude T. Rice. An account of the methods of unwatering the lower levels, the excellent system of ventilation, and the degree of success attending the reopening. Ills. 2500 w. *Eng & Min Jour*—Dec. 29, 1906. No. 81314.

The Great Comstock Lode. G. McM. Ross. Outlines the history of the discovery and development of this mining district and the output of gold and silver. 3000 w. *Min & Sci Pr*—Oct. 12, 1907. No. 87753.

### Cyanide Plants.

A Cheap Form of Cyanide Plant. Charles Hunter. Gives a copy of the contract and specifications for one of the portable plants used in Southern Rhodesia. 1000 w. *Inst of Min & Met, Bul* 34—July 18, 1907. No. 86496 N.

Cyanide Works' Clean-Up Practice. Jas E. Thomas. Gives suggestions of what is required in the design of cyanide plants, as regards the clean-up floors. 1700 w. *Jour Chem Met & Min Soc of S Africa*—Oct., 1906. No. 81015 E.

The Bullfrog Cyanide Mill. An illustrated description of the new mill which is being erected at Bullfrog, Nevada. 900 w. *Eng & Min Jour*—Feb. 23, 1907. No. 82568.

The Butters Cyanide Plant, Virginia City, Nev. Claude T. Rice. Illustrated description of a gold-extraction mill equipped with important labor-saving devices. 2500 w. *Eng & Min Jour*—Feb. 9, 1907. No. 82190.

A New Cyanide Plant. Mark R. Lamb. Plan, elevation, and description. 1100 w. *Min & Sci Pr*—Dec. 29, 1906. No. 81415.

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### Cyaniding

Cyaniding Plant for Treating Guana-juato Ores. Carlos W. VanLaw. Illustrated description of plant for treating silver ores. Pulp is transported from the mill to the tanks by a pipe line a mile long. 1200 w. Eng & Min Jour—April 6, 1907. No. 83515.

### Cyaniding.

Progress in Cyanidation During 1906. Alfred James. A review of improvements; the making of slime and the treatment, tube mills, crushing, roasting and conveying, etc. Ills. 3500 w. Min & Sci Pr—Jan. 5, 1907. No. 81605.

Recent Improvements in the Cyanide Process. F. L. Bosque. Reviews the development of the process and recent advances. 3000 w. Am Min Cong—1906. No. 87366 N.

The Cyanidation of Raw Pyritic Concentrates. Frank C. Smith. Describes the local and economic conditions at the mines of the Socorro Gold Co., Yuma Co., Arizona, and the results of a study of the treatment needed for these ores. 2000 w. Bul Am Inst of Min Engrs—Jan., 1907. No. 82506.

Handling Sand for Cyanide Vats. Charles Butters and Albert F. Crank. An illustrated explanation of features of the Blaisdell system. 1800 w. Min Wld—Jan. 12, 1907. No. 81612.

Last Drainings. H. A. White. A discussion of the possibilities of increased extraction of gold in the South African field. 2700 w. Jour Chem, Met & Min Soc of S Africa—Feb., 1907. No. 83543 E.

Electrolytic Precipitation of Cyanide Solutions. Charles P. Richmond. Illustrates and describes the process used at the San Sebastian mine, San Salvador, which yields fine gold and separates the copper in a marketable form. 2500 w. Eng & Min Jour—March 16, 1907. No. 83074.

Electrolytic Recovery of Gold in Cyanide Solutions. Berrih Neumann. Abstract translation from *Zeit. für Elektrochemie*. Describes experiments made to determine the current efficiency in the electrolytic recovery of gold from cyanide solutions. 900 w. Min Rept—Sept. 12, 1907. No. 87043.

Recent Advance in Cyanidation in Mexico. J. Leslie Mennell. Gives an account of the increasing use of this process for the extraction of gold and silver. 2500 w. Min Wld—Oct. 26, 1907. No. 87943.

Cyanide Practice at the Reliance Mill. Douglas Lay. The Hendryx process, agitation, settling and decantation, treating

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### Dredging

50 tons of ore per day. Flow sheet. 1200 w. Eng & Min Jour—April 20, 1907. No. 83843.

Electrolysis of Gold from Cyanide Solutions. Douglas Lay. Describes the method of recovery used at the Reliance mill, at Nelson, B. C., when complete precipitation was obtained by a solution temperature of 70° F. 2500 w. Eng & Min Jour—April 27, 1907. No. 83969.

Cyanide Practice on Boulder County Ores. Frank Leonard. Describes methods at the Cash mill in Magnolia, showing that the cyanide process can be used successfully with this class of ores. 2000 w. Min Rept—Feb. 14, 1907. No. 82442.

The Cyanide Process at the Portland (Colo.) Mill. Regis Chauvenet. General remarks on the history of this process, describing the present practice at this mill. 2200 w. Min Rept—Oct. 24, 1907. Serial. 1st part. No. 87920.

Cyanide Practice at the Homestake Mills. F. L. Bosqui. Briefly describes these plants at Lead, South Dakota, and interesting features of the practice. 1800 w. Min & Sci Pr—July 6, 1907. No. 85522.

A Simple Solution Meter. E. H. Nutter. Brief illustrated description of a meter for determining the amount of gold-bearing solution entering the precipitating boxes of cyanide plants. 400 w. Min & Sci Pr—Dec. 1, 1906. No. 80862.

See also Cobalt, Filter Press, and Rand, under GOLD AND SILVER.

### Distribution.

The Geological Distribution of Gold. T. A. Rickard. Considers the relation of geology to the gold industry, some mistakes made, recent advances, etc. 4000 w. Am Min Cong—1906. No. 87371 N.

### Dredging.

Gold Dredging in 1906. J. P. Hutchins. An account of the testing of dredging ground, expansion, methods, dredge design, cost, etc. 3000 w. Eng & Min Jour—Jan. 5, 1907. No. 81475.

The Gold-Dredge as a Machine. Discusses the defects of these dredges and the causes of breakdowns and interruption of work. 4500 w. Engr, Lond—April 12, 1907. No. 83883 A.

A New American Gold Dredge. Illustrates and describes details of the bucket used in a new dredge of the elevator type. 1200 w. Eng News—Nov. 1, 1906. No. 80177.

Recent Applications of Gold Dredging Machinery. Francis C. Nicholas. Illustrates and describes a special dredge de-

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## Dredging

signed to save both placer gold and diamonds. Suggests its application in other fields. 900 w. *Min Wld*—March 23, 1907. No. 83228.

Electric Gold Dredging. Description, with illustration, of an electric dredge in service in Montana. 900 w. *Elec Rev*, Lond—Jan. 18, 1907. No. 81982 A.

The Modern Gold Ship. George Ethelbert Walsh. An illustrated description of the work of the gold dredge in California. 1500 w. *Sci Am Sup*—July 6, 1907. No. 85412.

The Weaver Dredging System for the Recovery of Fine Gold. Describes this system which is meeting with marked success in Idaho. 1500 w. *Min Rept*—Nov. 1, 1906. No. 80244.

Gold Dredging in Tierra del Fuego. Juan D. Roberts. An illustrated account of modern methods being introduced in this placer mining region. 800 w. *Min Jour*—June 1, 1907. No. 84889 A.

Gold-Dredging Practice in Central Otago. Hugh R. Macdonald. Briefly reviews the past history of gold dredging in this field, showing the development of this important branch of alluvial mining, and describing the practice. 8000 w. *N Z Mines Rec*—Nov. 16, 1906. Serial. 1st part. No. 81692 B.

Gold-Dredging Practice at Ruby, Montana. J. P. Hutchins. An illustrated account of how the Conrey Placer Mining Company has met a series of difficult conditions in handling clayey gravel and boulders. 3000 w. *Eng & Min Jour*—June 29, 1907. Serial. 1st part. No. 85328.

See also British Columbia and Placers, under GOLD AND SILVER; and Damages, under MINING.

## Egypt.

Gold Mining in Egypt. C. S. Herzig. An illustrated article reviewing the history of the gold-mining industry in Egypt. 2000 w. *Min & Sci Pr*—Aug. 17, 1907. No. 86524.

## Filter Press.

The Kelly Filter Press. D. J. Kelly. Describes a development of pressure filtration for the treatment of slimes and the operation of a plant on the Kelly System. 2000 w. *Min Rept*—Aug. 22, 1907. No. 86569.

## French Guiana.

Placer Mining in French Guiana. Leon Delvaux. An illustrated account of old and new methods on the Elysee placer, and the success. 2000 w. *Eng & Min Jour*—March 2, 1907. No. 82688.

## GOLD AND SILVER

## Idaho

### Honduras.

Mining in Honduras. Horace G. Nichols. Describes the character of the deposits, methods of mining, labor, etc. Gold and copper and other minerals of value are found. Ills. 3000 w. *Min & Sci Pr*—May 11, 1907. No. 84370.

### Hydraulic Mining.

The Rehabilitation of Hydraulic Mining. J. P. Hutchins. Considers the steps now in progress to restore California's gold washing industry to its former importance, without interfering with agriculture. 1500 w. Ills. *Eng & Min Jour*—Nov. 10, 1906. Serial. 1st part. No. 80369.

Hydraulic Mining in Colorado. W. E. Thorne. Gives some of the actual costs in this class of mining in Colorado, as conducted at a high altitude and during short seasons of from four to five months. Ills. 1200 w. *Min & Sci Pr*—Dec. 8, 1906. No. 80959.

The Government and Hydraulic Mining in California. William W. Harts. An account of the methods of solving the debris problem. Ills. 2000 w. *Min Wld*—April 6, 1907. No. 83524.

Débris from Hydraulic Mining in California. William W. Harts. Some account of the work done by the California Débris Commission. 1600 w. *Min Rept*—Sept. 19, 1907. No. 87191.

Hydraulic Mining in Cariboo. Douglas Waterman. An illustrated description of this auriferous deposit and the method used in mining. 1800 w. *Min & Sci Pr*—Sept. 7, 1907. No. 86890.

Notes on Hydraulic Mining. Discusses the subject of hydraulic gold mining, with special reference to the Cariboo District, British Columbia, and Yukon Territory. Ills. 4000 w. *Mines & Min*—Aug., 1907. No. 86093 C.

The Hydraulic Equipment of the Old Channel Mines. John M. Nicol. Describes mines that have been worked for 30 years, especially the present plant and methods of working. 3000 w. *Min & Sci Pr*—Sept. 14, 1907. No. 87121.

History of Hydraulic Mining in New Zealand. John Ewing. Outlines the work of nature in the South Island of New Zealand, and the early methods of extraction of gold, describing the system of hydraulic elevating introduced in 1878. 2700 w. *Min Jour*—March 9, 1907. No. 83112 A.

See also Placers, under GOLD AND SILVER; and Damages, under MINING.

### Idaho.

South Mountain, Idaho. Robert N.



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## Klondike

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## Mexico

Bell. Describes this silver-lead property, giving sections. 1200 w. Eng & Min Jour—Feb. 9, 1907. No. 82193.

The Gold of the Snake River. Robert N. Bell. A detailed description of these low-grade deposits. Ills. 1500 w. Min & Sci Pr—April 27, 1907. No. 84091.

The Murray Gold Belt, Idaho. Theo. L. Lammers. Describes the formation of this district, the deposits, and gives an account of the development. 1600 w. Min & Sci Pr—May 18, 1907. No. 84602.

## Klondike.

Placer Mining in the Klondike. Joseph B. Tyrrell. An illustrated account of the conditions prevailing in the district, and the interesting new methods developed. Extracted from a paper before the Inst. of Min. Engrs., London. 4000 w. Eng & Min Jour—March 2, 1907. No. 82686.

Concentration of Gold in the Klondike. J. B. Tyrrell. Describes the conditions that prevail in the Klondike district, studying the rich placers, their origin and concentration. Ills. 2000 w. Ec Geol—June, 1907. No. 86484 D.

The Year 1906 in the Klondike District. J. P. Hutchins. A report of the year showing changes in plan of working, and discussing some of the problems of this region. 2500 w. Eng & Min Jour—March 16, 1907. No. 83076.

## Malay States.

Gold and Tin Mines of the Federated Malay States, with Especial Reference to Pahang. J. B. Scrivenor. Information concerning the deposits, workings, methods, etc. Map. 5000 w. Min Jour—June 8, 1907. Serial. 1st part. No. 85108 A.

## Mexico.

Old Mexican Methods. Bernard MacDonald. Illustrations and notes giving an idea of past methods used to win the silver from the ores. 700 w. Min & Sci Pr—Jan. 26, 1907. No. 82070.

Old Methods in Mexico. Extract from a report by E. Tilmann, describing conditions at Guanajuato as they appeared forty years ago. 2500 w. Min & Sci Pr—Sept. 21, 1907. No. 87259.

Mining Conditions in the Mountains of Chihuahua. John B. Farish. Illustrates and describes the Dolores mine and mill, and explains the difficulties of operation in the Sierra Madre. 4000 w. Eng & Min Jour—Feb. 2, 1907. No. 82092.

The Dolores Mine, Chihuahua, Mexico. John B. Farish. Section and description of the veins and the development. 500 w. Eng & Min Jour—May 4, 1907. No. 84216.

The Mines of the Altar District, Sonora. John S. Alexander. Map and description of this district, which contains rich placers and ledges. Silver and copper are also mined. 1000 w. Eng & Min Jour—April 6, 1907. No. 83516.

Other Metallurgical Methods at Pachuca. T. A. Rickard. Illustrates and describes other methods than the ancient patio process. 2700 w. Min & Sci Pr—Dec. 8, 1906. No. 80960.

The Parral District, Mexico. F. Lynwood Garrison. An illustrated account of the present condition of this famous silver mining district in the State of Chihuahua. 1800 w. Min & Sci Pr—March 23, 1907. No. 83346.

History and Development of Batopilas Mine, Mexico. Stuart Tod. Outlines the early history of this silver mine, and its present condition. Ills. 3000 w. Min Wld—May 4, 1907. No. 84237.

Mines and Prospects of Sierra Almolo. Robert Thomas Hill. An account of the Cigarrero Mine, and of the Iguaña Mine, in the Almolo mountain district of Mexico. Ills. 1000 w. Min Wld—May 4, 1907. No. 84232.

The Geology of the Veta Madre. T. A. Rickard. Gives plan and sections of the Veta Madre, with description of the rich silver deposits. 3500 w. Min & Sci Pr—April 27, 1907. No. 84090.

The Lluvia de Oro District, Mexico. R. H. Burrows. An illustrated account of this district and the discovery of the Lluvia de Oro gold mine, describing the topography, ore bodies, geological formation, etc. 2800 w. Min & Sci Pr—May 25, 1907. No. 84678.

The Mining District of Asientos, Mexico. Bruno Newman. Illustrated description of a district situated near two smelting plants which includes promising copper, lead, and silver deposits in rhyolite and limestone. 1500 w. Eng & Min Jour—June 1, 1907. No. 84708.

The Historic Mines of Proano. Paul W. Meyers. An interesting illustrated account of these old silver mines. 3000 w. Min Wld—July 6, 1907. No. 85475.

Proano, a Famous Mine of Fresnillo, Mexico. John A. Church. Gives the early history, geology and description of a remarkable development of veins which yielded \$800,000 annually for 67 years. 1800 w. Eng & Min Jour—July 13, 1907. No. 85547.

The Mines of El Doctor. T. D. Murphy. An illustrated article giving the location of this district, with a review of its history and geology, and the methods of mining and treating the silver bearing

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## Mexico

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## Milling

ores. 4500 w. *Min & Sc Pr*—Aug. 24, 1907. No. 86655.

Mines of the Taviche District, Oaxaca, Mexico. A. E. Place and H. L. Elton. Describes these mines, and the veins bearing the silver sulphide ores, which are remarkably free from faulting and usually appear at the surface. 1500 w. *Eng & Min Jour*—Oct. 5, 1907. No. 87462.

The History of Mining at Guanajuato. T. A. Rickard. An interesting illustrated account of one of the great mining cities of Mexico. 2800 w. *Min & Sci Pr*—Dec. 15, 1906. No. 81205.

The Later History of Guanajuato. T. A. Rickard. An illustrated account of recent enterprises of importance. 3000 w. *Min & Sci Pr*—Dec. 22, 1906. No. 81287.

Old Mexican Workings and Some Remarks on Sampling. T. A. Rickard. Illustrates and describes the workings at the Peregrina mine, near Guanajuato, and describes sampling methods. 3000 w. *Min & Sci Pr*—April 6, 1907. No. 83569.

Metallurgical Development at Guanajuato. T. A. Rickard. An illustrated description of the reduction works at the Sirena mill, with an account of their development. 2500 w. *Min & Sci Pr*—May 18, 1907. No. 84600.

Radical Changes in Metallurgy at Guanajuato, Mexico. Dwight Furness. Describes the change from the patio process used by Mexicans, to the American methods of extraction. Ills. 2000 w. *Min Rept*—Dec. 6, 1906. No. 80893.

The Big Shafts of Guanajuato. T. A. Rickard. Describes the surrounding country and especially the four great shafts and the work of unwatering of the San José shaft, giving an interesting account of ancient methods. Ills. 3000 w. *Min & Sci Pr*—Feb. 9, 1907. No. 82445.

Concluding Notes on Guanajuato. T. A. Rickard. Remarks on native labor, and description of the flood of July, 1905. Ill. 1500 w. *Min & Sci Pr*—July 20, 1907. No. 85961.

The Pinguico Mine, Guanajuato, Mexico. John A. Church. Describes the interesting geological features of this district, and the occurrence of ore. Considers this vein as a deposition of ore, carrying gold and silver, in a fault in a massive bed of rhyolite. 2500 w. *Eng & Min Jour*—Nov. 24, 1906. No. 80583.

The Mines of La Luz, Guanajuato, Mexico. John A. Church. The present article describes the geology of this district, now being reopened. Map. 4000 w. *Eng & Min Jour*—July 20, 1907. Serial. 1st part. No. 85840.

## Milling.

Graphic Evidence of Metallurgical Progress. A. E. Matthews. Illustrates and describes some of the crude devices and methods used forty years ago for extracting gold and silver from the ores of Colorado mines. 3500 w. *Ores & Metals*—Jan. 5, 1907. No. 81622.

Design and Working of Gold-Milling Equipment, with Special Reference to the Witwatersrand. George Alfred Denny. Describes a high-speed stamp-mill and its action, and the various machines used, devices and methods, general reduction and treatment scheme, etc. 2 plates and Ills. 18000 w. *Inst of Civ Engrs*—No. 3623. No. 82039 N.

Milling Gold Ores. Algernon Del Mar. Considers the objects sought in milling operation and the machines in use for their accomplishment. 2000 w. *Min & Sci Pr*—Nov. 17, 1906. No. 80734.

Milling at Gladstone, Colo. George P. Scholl. Describes tube milling at the Gold King mill, and successful concentration of low-grade complex ore at the Mogul mill. Ills. 1800 w. *Mines & Min*—June, 1907. No. 84740 C.

Stamp-Mill Reduction-Plant of the New Kleinfontein Company, Limited, Witwatersrand, Transvaal. Edward John Way. An illustrated detailed description of a new 200-stamp mill installation designed to use mechanical means wherever hand-labor could be dispensed with. Appendices. 23500 w. *Inst of Civ Engrs*—No. 3631. No. 86373 N.

The Milling Practice at El Oro Mine, Mexico. E. Burt. Describes the treatment and the tube mills. Ills. 2500 w. *Min Wld*—Oct. 26, 1907. No. 87945.

The Desert Mill. A. R. Parsons. Detailed description of 100-stamp mill and power-plant at Millers, Nevada, for milling ores from the Tonopah mines. Ills. 4500 w. *Min & Sci Pr*—Oct. 19, 1907. No. 87889.

Primitive Mexican Crushing and Dressing Plant. Frank H. Probert. Illustrated description of simple appliances devised centuries ago and still in use in the mountains of Chihuahua. 1200 w. *Eng & Min Jour*—April 6, 1907. No. 83517.

Combined Ore Crusher, Pulverizer, Retort and Bullion Separator. A combined arrangement for a continuous operation on any kind of ore is illustrated and described. 800 w. *Min Rept*—Aug. 22, 1907. No. 86570.

See also Arizona, Australia, Black Sands, Chlorination, Colorado, Cyaniding, Filter Press, Mexico, New Zealand,

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## Montana

Rand, Samplers, Slimes Treatment, Stamp Mills and Tube Mills, under **GOLD AND SILVER**; Concentration and Ore Feeders, under **MINING**; and Mercury, under **MISCELLANY**.

## Montana.

Early Mining History of Montana. K. T. Harmond-Fogarty. A review of the early history of mining and of the difficulties in developing the gold and silver mines. 3500 w. *Min Wld*—June 8, 1907. No. 84832.

Granite-Bimetallic and Cable Mines of Montana. W. H. Emmons. Describes the geology and ore deposits of the famous Granite Mountain silver mine of the Phillipsburg quadrangle in the present number. 3500 w. *Ores & Met*—July 5, 1907. Serial. 1st part. No. 85432.

## Nevada.

The Renaissance of Nevada. Remarks on the recent revival of mining in the deserts of Nevada, the leading features in the development, the deposits of gold, silver and copper, etc. 2000 w. *Min & Sci Pr*—May 4, 1907. No. 84307.

Water Resources of Nevada. Henry Thurtell. An account showing the available supply of water, which is so much needed for the working of gold and silver mines and for domestic purposes. Ills. 3000 w. *Min & Sci Pr*—May 25, 1907. No. 84677.

The Johnnie Mining District of Nevada. W. A. Root. An illustrated account of these gold mines, the transportation facilities, and matters of general interest. 2500 w. *Min Wld*—Nov. 24, 1906. No. 80599.

Round Mountain Camp, Nevada. George A. Packard. The location, geology and mining activities of this gold district are illustrated and described. 1200 w. *Eng & Min Jour*—Jan. 19, 1907. No. 81699.

The Old Camps of Ward, Nevada. H. R. Plate. A brief historical review of the Martin White mine, a silver-lead producer of the '70s, and early '80s, which is to be worked for copper and lead. 1000 w. *Min & Sci Pr*—March 2, 1907. No. 82852.

Mining in the Wonder District, Nevada. Edward R. Zalinski. A report of progress since the first claim was located in April, 1906. The chief value is silver, with from one-fifth to one-eighth in gold. Ills. 1500 w. *Eng & Min Jour*—April 20, 1907. No. 83844.

The Mines of the Fairview District, Nevada. Edward R. Zalinski. Illustrates and describes a new silver-gold camp in

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## New Zealand

Churchill County, where the chief difficulties are lack of water and a long haul to the railroad. 3300 w. *Eng & Min Jour*—April 13, 1907. No. 83712.

The Gold Mountain District, Nevada. F. L. Ransome. Describes this district and the gold and silver ores, and the principal mines. 1500 w. *Min Rept*—May 2, 1907. No. 84202.

The Chipmunk Gold Belt, Nevada. Describes this district. The ores are gold with only a trace of silver, and no base metals have as yet been found in this belt. 800 w. *Min Rept*—July 4, 1907. No. 85434.

Pioche, Nevada. James W. Abbott. Gives the history of the discovery and development of this silver region. Ills. 2500 w. *Min & Sci Pr*—Aug. 10, 1907. No. 86406.

The Osceola Gold District of Nevada. Gives the history and a description of this district. Ills. 1600 w. *Min Rept*—Oct. 3, 1907. No. 87501.

The Geology of Goldfield, Nevada. Frederick Leslie Ransome. Abstracted from *Bul. U. S. Geol. Surv.* Map and description. 3300 w. *Min & Sci Pr*—April 6, 1907. No. 83570.

The Combination Mine. Edgar A. Collins. The present number gives an account of the early development and the geologic structure of this Nevada mine. Ills. 2500 w. *Min & Sci Pr*—Sept. 28, 1907. Serial. 1st part. No. 87409.

Goldfield, Nevada. An illustrated review of this field and its development, reporting the extreme richness of the deposits. 1500 w. *Min & Sci Pr*—June 8, 1907. No. 84863.

Gold Tellurides. W. J. Sharwood. Gives drawings of thin sections showing two modes of occurrence of these ores at Goldfield, Nevada. 500 w. *Min & Sci Pr*—June 8, 1907. No. 84867.

The Goldfield District, Nevada. Abstract of paper by J. E. Spurr, giving information of the geology of this district. 2000 w. *Jour Fr Inst*—Aug., 1907. No. 86344 D.

## New Mexico.

The Lordsburg Mining Region, New Mexico. Fayette A. Jones. Gives the history of the region, its geology, and report of gold, silver, copper, lead and miscellaneous minerals. 1600 w. *Eng & Min Jour*—Sept. 7, 1907. No. 86808.

## New Zealand.

The Economic Possibilities of the Hokitika Sheet, North Westland Quadrangle, New Zealand. Considers the

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## New Zealand

## GOLD AND SILVER

## Placers

economic possibilities of this district, especially the minerals, which include auriferous and platiniferous veins, gold-bearing gravels, greenstone, talc, coal, clays for brick making and stones for ornamental and building purposes. 3500 w. *Min Jour*—Nov. 17, 1906. No. 80723 A.

The Undeveloped Gold-Deposits of New Zealand. W. Green. Suggestions for future development, giving results of investigations and study of the geology of the gold-deposits of the colony. 8500 w. *N Z Mines Rec*—April 16, 1907. No. 84899 B.

Notes on Waihi Ore Treatment. Ralph Stokes. Describes the characteristics of the gold ores, and their requirements, calling attention to the honey-comb tube mill liners, the independent placing of the amalgamating house, and the vacuum slimes plant. Ills. 2800 w. *Jour Chem, Met & Min Soc of S Africa*—July, 1907. No. 87175 E.

## Nile.

The Nile as a Mining River. Alexander Del Mar. Reviews the ancient history of mining in this region. 3800 w. *Min & Sci Pr*—Oct. 12, 1907. No. 87752.

## Nova Scotia.

Gold Mining in Nova Scotia. George W. Stuart. Reviews the causes of the present unsatisfactory condition of gold mining in this province. 1600 w. *Can Min Jour*—April 1, 1907. No. 83512.

The Gold Mining Industry of Nova Scotia. E. Percy Brown. Reviews the history of this industry in Nova Scotia, showing the clauses that have interfered with the development. 4500 w. *Can Min Jour*—July 15, 1907. No. 85786.

The Richardson Mine. Percy Brown. History and illustrated description of this gold mine in Nova Scotia. 1700 w. *Can Min Jour*—June 15, 1907. No. 85216.

The Development of an Ore Shoot in Nova Scotia. E. Percy Brown. Gives an outline of the history of the Brookfield mine. 1600 w. *Can Min Jour*—Oct. 15, 1907. No. 87755.

Gold Measures of Tangier, Nova Scotia. George A. Packard. Describes characteristics of a district where the mines have been worked by small owners, or lessees. Ills. 2000 w. *Min & Sci Pr*—Oct. 5, 1907. No. 87540.

## Ontario.

New Silver District in the Temagami Reserve. L. H. Mattair. Brief account, with map showing location of what promises to be a rich district. 600 w. *Eng & Min Jour*—June 15, 1907. No. 85051.

The Montreal River Silver District.

Reginald Meeks. An illustrated report of a new district, 60 miles from Cobalt, and covering an area of about 80 square miles, where native silver has been found. 2500 w. *Eng & Min Jour*—Sept. 21, 1907. No. 87164.

## Ore Deposits.

Some Associations of Gold with Pyrite and Tellurides. Drawings and notes on occurrences showing the relations between gold and pyrite in quartz veins. 1500 w. *Min & Sci Pr*—Jan. 26, 1907. No. 82068.

Pockets in the Upper Portions of Gold Veins. George W. Kimble. Sketch and description of some of the pockets found in Eldorado County, California. 1200 w. *Min & Sci Pr*—March 16, 1907. No. 83195.

## Peru.

The Silver & Copper-Bearing Veins of Huancavelica, Cerro de Pasco, Peru. Carlos E. Velarde. Describes the geology of this region, the deposits, etc. 2000 w. *Min Jour*—June 22, 1907. No. 85395 A.

## Placers.

Conserving the Water Supply in Placer Mining. Dennis H. Stovall. Considers advantages gained by properly constructed reservoirs, to lengthen the hydraulic season, and the employment of a self-shooter. 1000 w. *Ores & Metals*—March 20, 1907. No. 83232.

Loss of Gold in Placer Mining. Dennis H. Stovall. Suggestions for a durable and efficient riffle, and remarks on causes of loss. 1000 w. *Min & Sci Pr*—Feb. 23, 1907. No. 82751.

Examination of Placer Ground. Regis Chauvenet. Remarks on the importance of a careful testing of the ground in placer mining, and a discussion of the pan as a means of testing are given in the present article. 1800 w. *Min Rept*—April 4, 1907. Serial. 1st part. No. 83523.

Examining a Placer Property. George W. Maynard. Outlines methods and gives an account of an investigation of property in Arizona. 1800 w. *Min Wld*—July 6, 1907. No. 85474.

The Essential Data of Placer Investigations. J. P. Hutchins. Calls attention to points to be ascertained and precautions to be taken in the examination and valuation of placer ground before exploitation. Ills. 2500 w. *Eng & Min Jour*—Aug. 24, 1907. Serial. 1st part. No. 86548.

The Nomenclature of Modern Placer Mining. J. P. Hutchins. Discusses the classification of placers, their origin, and methods of exploitation. Ills. 2000 w.

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Eng & Min Jour—Aug. 17, 1907. No. 86426.

Ways of Cleaning Up in Hydraulic Placer Mining. Dennis H. Stovall. Shows how gold and platinum may be lost through carelessness, and gives suggestions as to methods of reducing these losses. 1000 w. Ores & Met—July 20, 1907. No. 85899.

Gold Dredging in Europe (Die Goldbaggerie in Europa). L. St. Rainer. Read before the Mining and Metallurgical Section of the Austrian Society of Engineers and Architects. Discusses the gold-bearing streams and the dredging operations. 2800 w. Serial. 1st part. Oest Zeitschr f Berg und Huttenwesen—April 27, 1907. No. 84136 D.

Gold Washing in the South. E. B. Wilson. Describes some crude methods which succeed where expensive outfits would fail. 900 w. Eng & Min Jour—Nov. 17, 1906. No. 80442.

British Columbia Placers: Past and Present. Horace F. Evans. Interesting information concerning the early placer mining of British Columbia. 1800 w. Min Wld—May 4, 1907. Serial. 1st part. No. 84234.

Hydraulic Placer Mining in the Cariboo District. B. C. Etienne A. Ritter. A report of this district and the important mines being worked. Ills. 2300 w. Min Wld—Dec. 8, 1906. No. 80897.

Placer Mining Methods in the Atlin District. Alfred Carmichael. Illustrated description of the dams and plant for obtaining water, and the methods of mining and blasting before hydraulicking. 3000 w. Mines & Min—Jan., 1907. No. 81396 C.

Placer Mining Methods in the Yukon. L. M. Prindle. Describes the conditions and the methods of working. 1200 w. Min Wld—Dec. 1, 1906. No. 80777.

Placer Dredging in California. George L. Holmes. An illustrated account of the development and success of this industry, showing types of dredges used. 1600 w. Min Wld—May 25, 1907. No. 84603.

Cause of Fine Gold in San Juan River, Utah. A. Lakes. Explains the probable origin of the gold and the cause of its extreme fineness. 900 w. Min Rept—Oct. 3, 1907. No. 87500.

A Mining Enterprise in Colombia. Francis C. Nicholas. Illustrated description of gold placer deposits remarkable both for their high values and for peculiarities of formation. 2000 w. Min Wld—Feb. 9, 1907. No. 82210.

See also Columbia, French Guiana and Klondike, under GOLD AND SILVER.

## GOLD AND SILVER

### Production.

Gold Mining and Gold Production. Prof. John Walter Gregory. (Cantor Lecture.) This first lecture considers alluvial gold mines, the source of gold, washing and sluicing, dredging, methods, etc. Ills. 6500 w. Jour Soc of Arts—Sept. 13, 1907. Serial. 1st part. No. 87199 A.

The Great Silver and Lead Mines. T. A. Rickard. Information of interest in regard to the greatest producers. Ills. 700 w. Min & Sci Pr—June 22, 1907. No. 85363.

The Great Gold Mines. T. A. Rickard. Some facts in regard to the leading gold mines of the present day, their productiveness, and ore values. Considers the Robinson, in the Transvaal, the greatest gold mine yet worked. 2500 w. Min & Sci Pr—May 4, 1907. No. 84305.

Present Status of the Gold Mining Industry. J. H. Curle. A review of the present conditions in all parts of the world where gold is produced. 3300 w. Min & Sci Pr—Aug. 3, 1907. No. 86189.

The Precious Metals. Gives figures of the production of gold, silver and platinum, with review of the conditions in the chief producing countries. 2500 w. Eng & Min Jour—Jan. 5, 1907. No. 81470.

### Queensland.

Mount Langen, Upper Brisbane Valley. Lionel C. Ball. Describes gold, silver, and bismuth prospecting areas. 5000 w. Queens Gov Min Jour—Sept. 15, 1906. No. 80287 B.

The Seven-Mile (Nanango) Goldfield. Lionel C. Ball. History and description of this field, with special reference to the occurrence of true ruby. Map. 3500 w. Queens Gov Min Jour—Oct. 15, 1906. No. 80921 B.

Some Goldfields of the Cape York Peninsula. Walter E. Cameron. Information in regard to the Starcke, Alice Rever (Philp), Hamilton, and Coen fields. 6400 w. Queens Gov Min Jour—Dec. 15, 1907. No. 82017 B.

Some Croydon Gold Mines. B. Dunstan. Information concerning recent investigations made of these mines, especially with reference to Bennion's reef and the Highland Mary reef. Ills. 5500 w. Queens Gov Min Jour—May 15, 1907. No. 84871 B.

The Premier Goldfield of Queensland. John Plummer. An account of the discovery and development of "Charter's Towers." Ills. 1200 w. Min Wld—Sept. 14, 1907. No. 87042.

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## Rand

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## Samplers

### Rand.

The Past, Present, and Future of the Rand. H. C. Behr. Abstract of the president's valedictory address to the Transvaal Inst. of Mech. Engrs. Briefly considers the utilization of the power of Victoria Falls and the applications to mining. Also other improvements possible. 1500 w. Min Jour—Sept. 7, 1907. No. 87068 A.

The Commercial Aspect of Rand "Profits." George A. Denny. An examination of the situation, the working costs, and future outlook. 3500 w. Min Jour—Aug. 24, 1907. Serial. 1st part. No. 86723 A.

Working Costs of the Mines of the Witwatersrand. Ross E. Browne. Information collected in the course of inspection of mines during 1904 and 1905. 15000 w. Tables and diagrams. Jour S African Assn of Engrs—May, 1907. No. 85378 F.

Working Costs of the Mines of the Witwatersrand. Discussion by R. N. Kotzé, of the paper by Ross E. Browne. 5500 w. Jour S African Assn of Engrs—Aug., 1907. No. 87504 F.

Rand Mining Conditions. E. M. Weston. Begins a discussion of the cause of shortage of labor and other existing conditions. 2000 w. Aust Min Stand—Feb. 6, 1907. Serial. 1st part. No. 83129 B.

Politics and the Transvaal Mining Industry. Edgar P. Rathbone. An explanation of present conditions and the outlook for mining. 1600 w. Min & Sci Pr—March 30, 1907. No. 83444.

Mining Conditions in South Africa. J. B. Pitchford. A lecture delivered to the mining students of the Univ. of Cal. Deals with the value of ore, labor conditions, mining plants and methods, and costs of mining and milling. Ills. 6500 w. Mines & Min—Sept., 1907. No. 86765 C.

Conditions Met in South African Mining. J. H. Pitchford. From an address before the students of the Univ. of California. Shows that in spite of the high cost of supplies, transportation, and labor, the low-grade gold-deposits are made to yield enormous profits. 5000 w. Eng & Min Jour—March 9, 1907. No. 82816.

Mining in South Africa. J. B. Pitchford. A lecture delivered to the mining students of the University of California, giving an account of the gold discoveries of this region and their development. 2000 w. Min & Sci Pr—March 9, 1907. Serial. 1st part. No. 83054.

Mining Conditions in South Africa. J. B. Pitchford. A description of present

conditions and the methods which make possible a production of \$10,000,000 of gold per month from ore giving \$8.50 per ton. 1500 w. Min Wld—April 6, 1907. Serial. 1st part. No. 83525.

Labor Conditions on the Mines. H. H. Johnson. Abstract of the president's valedictory address to the Transvaal Inst. of Mech. Engrs. Discusses methods of reducing labor costs, and other labor questions. 2500 w. Min Jour—Sept. 7, 1907. No. 87069 A.

Inaugural Address. Prof John Yates. Discusses mining practice of the present and the future outlook, education, health of miners, depression in the mining industries, etc. 8500 w. Jour Chem, Met & Min Soc of S Africa—July, 1907. No. 86999 E.

The Origin of Gold in the Rand Banket. J. W. Gregory. States the theories advanced of the genesis of the Rand gold, describes the rocks, and investigates the evidence of the different theories, deciding in favor of the marine placer theory, giving reasons. 18000 w. Inst of Min & Met, Bul No 35—Aug. 15, 1907. No. 87235 N.

Recent Innovations in Rand Metallurgical Practice. G. A. and H. S. Denny. A summary of the new process of sliming and continuous cyanide circulation. Ills. 2500 w. Eng & Min Jour—Dec. 29, 1906. No. 81316.

Rand Metallurgical Practice and Recent Innovations. Discussion of the paper by G. A. and H. S. Denny. 6800 w. Jour S African Assn of Engrs—Nov., 1906. No. 81517 F.

See also Labor, under INDUSTRIAL ECONOMY.

### Rolled Silver.

The Manufacture of Rolled Sterling-Silver. Erwin S. Sperry. An interesting article giving an illustrated detailed description of present methods. 5000 w. Jour Fr Inst—Feb., 1907. No. 82061 D.

### Russia.

A Visit to the Gold Fields of Orenburg, Russia. F. H. Hatch. Describes peculiarities of this district, noticed during recent travels. 2200 w. Inst of Min & Met, Bul 31—April 11, 1907. No. 84012 N.

### Samplers.

Some Tailing Samplers. R. Gilman Brown. Illustrates and describes two practical machines for this work which have stood the test of long operation. 600 w. Min & Sci Pr—Nov. 3, 1906. No. 80384.

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## Santo Domingo

### Santo Domingo.

Gold Mining in Santo Domingo. F. Lynwood Garrison. An illustrated article giving information in regard to the placer gold deposits, and the probable presence of platinum. 2500 w. Eng & Min Jour—Sept. 14, 1907. No. 87006.

### Servia.

Gold in Eastern Servia. Douchan Ivanovitch. Abstract translation. Brief account of this region, the geology, mineralogy and the mining industry. 1600 w. Min Jour—Oct. 5, 1907. No. 87591 A.

### Siberia.

Gold Mining in Central Siberia. An interview with W. A. Mercer, who has made many prospecting expeditions in Siberia. 4000 w. Min Jour—Feb. 16, 1907. No. 82604 A.

Siberian Proprietary Mines, Limited. Considers the properties in detail. 4000 w. Min Jour—Feb. 16, 1907. No. 82605 A.

### Silver-Lead.

Silver-Lead Smelting on the West Coast of Tasmania. T. Kapp. Explains methods of treating economically the refractory ores of very low grade, containing zinc. 2500 w. Min Jour—Dec. 22, 1906. No. 81339 A.

Silver-Lead Smelting Practice. T. S. Austin. Discusses slag composition and characteristics, and furnace operations. 1800 w. Min & Sci Pr—Feb. 23, 1907. No. 82752.

### Silver-Zinc.

Value of Argentiferous Blende. Report of the British Columbia Zinc Commission on the value of silver-zinc ores and the methods of extraction. 2500 w. Min Rept—Dec. 6, 1906. No. 80894.

### Slimes Treatment.

The Tavener Process. L. A. E. Swinney. Gives in detail the working of this process for the smelting of zinc gold slimes. 2800 w. Inst of Min & Met—Bul No. 26. Nov. 8, 1906. No. 80565 N.

The Tavener Process of Gold Slimes. L. A. E. Swinney. Notes on the smelting of zinc-gold slimes, representing the actual smelting of a "clean-up" from start to finish of a mine on the Rand. Ills. 2000 w. Eng & Min Jour—March 30, 1907. No. 83354.

Automatic Sluicing of Filter-Press Residues. Frank Groch. An illustrated report on the new Homestake slimes plant, and its economy in labor. 2000 w. Ores & Met—Dec. 15, 1906. No. 81038.

The Homestake Slime Plant. Mark Ehle, Jr. Illustrates and describes the

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Merrill automatically discharged filter press, and the plant for treating slimes carrying gold values of 80 cents per ton. 4000 w. Mines & Min—March, 1907. No. 82762 C.

Methods of Slimes Treatment. C. Everard Arnold. Describes the method of slime treatment employed by the North Star Mines Co., of Grass Valley, Cal. 900 w. Aust Min Stand—Oct. 17, 1906. No. 80803 B.

Recent Improvement in Slimes Treatment. D. J. Kelly. Read before the W. Assn. of Tech. Chem. & Met. Describes methods of filtration used for separating the gold solutions from slimes. 4500 w. Mines & Min—Oct., 1907. No. 87454 C.

The Butters Slime-Filter at the Cyanide Plant of the Combination Mining Company, Goldfield, Nev. Mark R. Lamb. An illustrated description of this filter and its use. 2000 w. Bul Am Inst of Min Engrs—Jan., 1907. No. 82513.

The Butters Filter. Mark R. Lamb. Illustrated description of this filter and its operation. 500 w. Min & Sci Pr—Feb. 2, 1907. No. 82207.

The Filtration of Slime by the Butters Method. E. M. Hamilton. A detailed description of the inception, construction, and method of working of this patent filter. Ills. 3500 w. Min & Sci Pr—June 22, 1907. Serial. 1st part. No. 85362.

The Ridgway Filter. Illustrated description of an invention for treating slime containing gold in solution. 1600 w. Min & Sci Pr—Feb. 9, 1907. No. 82444.

A Siphon Device for Removing Floating Material. Edward S. Wiard. Illustrates and describes a device for removing slime, and also suggestive of a means of reducing the volume of water flowing through a tank. 700 w. Min & Sci Pr—Feb. 2, 1907. No. 82208.

The Utilization of Waste Heat in Slimes Settlement. A. Salkinson. Describes trials made with encouraging results. 2500 w. Jour Chem, Met & Min Soc of S Africa—June, 1907. No. 86448 E.

See also Filter Press, under GOLD AND SILVER.

### Smelting.

Smelting Chloride of Silver. Describes two methods used for obtaining metallic silver in its chloride, giving the advantages of each. Ill. 1200 w. Brass Wld Feb., 1907. No. 82555.

### South Africa.

New Brighton Mines, Limited. Report

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of a visit by C. S. Edmondson, who has specially examined the Bendigo alluvial gold field in South Africa. 3500 w. *Min Jour*—Feb. 2, 1907. No. 82250 A.

See also Rand, under GOLD AND SILVER.

### Stamp Mills.

Masonry Foundations for Mortars of Stamp Mills. Arthur B. Foote. Describes three mills observed by the writer, and describes their behavior with continual service. Favors masonry foundations properly constructed. 1500 w. *Eng & Min Jour*—Nov. 10, 1906. No. 80370.

Battery Foundations of the Kuk-San-Dong Mill, Korea. Charles D. Kaeding. Illustrates and describes concrete mortar piers and battery foundations of a somewhat unusual type. 600 w. *Min & Sci Pr*—May 11, 1907. No. 84368.

More Notes on Stamp Mill Practice. Courtenay de Kalb. Opinions concerning screens, foundations, stamp duty, mortar liners, shoes and dies, amalgamation, etc. 3000 w. *Can Min Inst*—1906. No. 83805 N.

Notes on a Modern Stamp Mill. Gil-mour E. Brown. Describes two stamp mills and their work, the ore, the treatment, and gives general information. Ills. 4500 w. *Inst of Min & Met, Bul.* No. 32—May 16, 1907. No. 85041 N.

The Palmer Mountain Mill. Illustrated description of a new electrically operated stamp mill in the state of Washington. 1400 w. *Eng & Min Jour*—Dec. 8, 1906. No. 80888.

A Gold Stamp Mill for Laboratory Testing. Frederick H. Sexton. Describes a stamp mill designed to provide a wide range of adjustment, and suitable for testing ores for the best milling conditions. Ills. 1500 w. *Min Wld*—July 6, 1907. No. 85479.

### Tibet.

The Tibetan Goldfields. Dr. Malcolm Maclaren. Map and information in regard

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to the gold-bearing area of southwestern Tibet. 4000 w. *Min Jour*—June 22, 1907. No. 85393 A.

### Tube-Mills.

Grinding in Tube-Mills at the Waihi Gold-Mine, Waihi, New Zealand. E. G. Banks. Gives records of working extending over a lengthy period. 1400 w. *Bul Am Inst of Min Engrs*—Jan., 1907. No. 82512.

Notes on Some Recent Improvements in Tube Mill Practice. Kenneth L. Graham. Suggests some improvements recently occurring to the author which affect the economics of tube milling. 3500 w. *Jour Chem, Met, & Min Soc of S Africa*—April, 1907. No. 85093 E.

### Utah.

The Re-Opening of the Carbonate Mine, Utah. Francis C. Nicholas. An illustrated review of the history of this silver-lead mine, the re-opening of which is under discussion. 1000 w. *Min Wld*—Jan. 5, 1907. No. 81465.

### Victoria.

Walhalla Goldfield, Victoria. H. Her-man. An illustrated account of changes and progress during the last six years. 2000 w. *Aust Min Stand*—Aug. 14, 1907. Serial. 1st part. No. 87232 B.

### Yukon.

Recent Developments in Mining in the Southern Yukon. D. D. Cairnes. Explains the conditions under which mining must be conducted, and the general characteristics of this district, describing claims seen, and deposits. 1600 w. *Can Min Jour*—April 15, 1907. Serial. 1st part. No. 83708.

Note on Windy Arm Silver Bearing Veins. R. G. McConnell. Brief description of a mineral area of promise in the Yukon Territory. The geology, veins and mining development. 1500 w. *Jour Can Min Inst*—1906. No. 83802 N.

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A Native Steel-Smelting Village in West Africa. An interesting account of the methods adopted in the village of Olagibi. 5000 w. *Sci Am Sup*—Nov. 10, 1906. No. 80277.

### Armor Plate.

See Armor, under MECHANICAL ENGINEERING, MACHINE WORKS AND FOUNDRIES.

### Assaying.

Determination of Manganese in the Presence of Tungsten (Ueber die Manganbestimmung bei Anwesenheit von Wolfram). G. von Knorre. 2200 w. *Stahl und Eisen*—March 13, 1907. No. 83623 D.

The Determination of Chromium in Steel in the Presence of Tungsten (Ueber die Chrombestimmung im Stahl, insbesondere bei Anwesenheit von Wolfram).



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G. v. Knorre. A technical discussion of various methods, giving results. 3200 w. Stahl u Eisen—Aug. 28, 1907. No. 86935 D.

Carbon Estimation. James A. Aupperle. Describes a method for the estimation of carbon in iron and steel by oxidizing the borings, with the use of a single Bunsen burner. 2000 w. Ir Age—Jan. 24, 1907. No. 81766.

The Rapid Determination of Nickel in Steel. Dr. George T. Dougherty. Describes a new method which has a claimed capacity considerably above the standard ether method. 2200 w. Ir Age—April 25, 1907. No. 83913.

The Estimation of Phosphorus in Steel and Iron. J. J. Morgan. Describes a method by which a determination in steel may be made in 30 minutes without the use of any special apparatus. 800 w. Prac Engr—Aug. 16, 1907. No. 86583 A.

Tungsten in Natural Steel (Ueber die Wolframbestimmung im Wolframstahl). G. von Knorre. Discussion of various methods for the determination of tungsten in steel. 3000 w. Stahl und Eisen—Dec. 15, 1906. No. 81804 D.

A Method for the Estimation of Iron in Presence of Titanium. F. A. Gooch and H. D. Newton. Describes an investigation undertaken for the purpose of adapting the ordinary process of reducing the ferric salt by zinc to the estimation of iron in presence of titanium. 700 w. Am Jour of Sci—May, 1907. No. 84016 D.

Determination of Iron in Iron Ore by the Reinhardt Method (Zur Bestimmung des Eisens in Eisenerzen Nach der Reinhardtschen Methode). Alexander Müller. Critical comparison of various methods with that of Reinhardt. 4600 w. Stahl und Eisen—Dec. 15, 1906. No. 81803 D.

Determination of Silica and Alumina in Iron Ores. Graham W. Dean. Gives the method of procedure when silica only is required, and also when alumina is required. 2000 w. Min Wld—May 11, 1907. No. 84308.

Report of Committee on Standard Methods for the Analysis of Iron. Presented to the Am. Found. Assn. Gives methods for determining graphitic carbon, manganese, and phosphorus. 1800 w. Ir Trd Rev—June 6, 1907. No. 84736.

See also Slags, under IRON AND STEEL.

### Austria.

The Austrian Iron Industry. Wilhelm Kestranek. Read before the Ir. & St. Inst., at Vienna. Reviews the history of the industry during the last twenty-five

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years. 4000 w. Engng—Sept. 27, 1907. No. 87523 A.

### Austrian Deposits.

The Erzberg of Eisenerz. H. Bauerman. Read before the Ir. & St. Inst., at Vienna. Describes this ore mountain of the Eastern Alps, and its deposits, especially the iron ore workings. 2800 w. Engng—Sept. 27, 1907. No. 87524 A.

### Blast-Furnace Gas.

The Utility of Cleaning Blast Furnace Gas. H. G. Scott. Abstract of a paper read before the Cleveland Inst. of Engrs. and of the discussion. Describes the method of cleaning the gas, the results, and cost. 2500 w. Min Jour—Jan. 26, 1907. No. 82151 A.

Direct Measurement of the Speed of Hot Gas Currents (Direkte Messung der Geschwindigkeit heisser Gasströme). R. Vambera and F. Schraml. Description of a simple method and calculation of results. Diagrams. 2200 w. Stahl und Eisen—Mar. 6, 1907. No. 82048 D.

The Measurement of Large Quantities of Gas by the Manometer (Messung Großer Gasmengen mittels Differenzdruckes). E. Stach. Illustrates and describes a method of measuring the gas delivered from blast furnaces and coke ovens by recording manometers. Diagrams. 2000 w. Stahl u Eisen—May 1, 1907. No. 84936 D.

See also same title, under ELECTRICAL ENGINEERING, GENERATING STATIONS; and Furnace Gases, under MECHANICAL ENGINEERING, COMBUSTION MOTORS.

### Blast Furnaces.

Some Modifications in Blast Furnace Construction. Julian Kennedy. Explains improvements made in furnace construction, which give greater safety to employees. Discussion. Ills. 4000 w. Pro Engrs' Soc of W Penn—Feb., 1907. No. 83034 D.

An Example of Blast Furnace Reconstruction. Illustrated description of the modernized plant of the Richard Heckscher & Sons Company, Swedeland, Pennsylvania. 1500 w. Ir Age—July 25, 1907. No. 85877.

The Luermann Cinder Notch. Fritz W. Luermann. Describes disturbances in the working of a blast-furnace, and explains the advantages of the Luermann cinder notch. Ills. 1200 w. Ir Age—April 18, 1907. No. 83756.

The Application of the Centrifugal Dust Collector to the Blast Furnace. Frank C. Roberts. Briefly reviews the develop-

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ment of devices for the removal of dust and dirt from the waste gases of the blast furnace and gives results obtained by the use of the centrifugal dust collector. 1400 w. *Ir Trd Rev*—May 9, 1907. No. 84270.

The Modern American Blast Furnace. Bradley Stoughton. An illustrated article explaining how the modern blast furnace is constructed, how it is charged, and how the blast is supplied and heated. 1800 w. *Eng & Min Jour*—July 27, 1907. No. 85952.

Charging a Modern Iron Blast Furnace. Bradley Stoughton. Considers the variations required in the charge of the furnace to produce the required results in pig iron. 1200 w. *Eng & Min Jour*—Aug. 24, 1907. No. 86551.

Charging Furnaces by American Methods (*Le Chargement des Hauts Fourneaux d'après les méthodes américaines*). Ch. Dantin. Description of mechanical conveyors of American design used in France. Illus. 1700 w. *Le Génie Civil*—Jan. 19, 1907. No. 82324 D.

Machines for Charging Metallurgical Furnaces (*Machines à Charger les Fours Métallurgiques*). Ch. Dantin. Illustrated description of machines for charging Martin furnaces and machines for handling ingots and ingot moulds. 2500 w. *Génie Civil*—April 20, 1907. No. 84115 D.

Notes on Blast Furnace Practice. H. Pilkington. Abstract of an address before the British Found. Assn. Brief account of the development of the blast furnace, and methods of handling materials, with a suggestion for an ideal foundry plant having blast-furnaces, making pig iron, and producing gas to supply all the power required. Ills. 2000 w. *Ir & Coal Trds Rev*—Dec. 7, 1906. No. 81037 A.

The Economical Production of Pig Iron.—A Study of Conditions Existing in the Blast Furnace. Horace Allen. A theoretical and mathematical discussion of the factors necessary for maximum efficiency. 2300 w. *Ir Trd Rev*—March 14, 1907. No. 83007.

Blast Furnace Practice. T. F. Witherbee. Discusses the papers of F. L. Grammer, and of J. E. Johnson, Jr. 5000 w. *Bul Am Inst of Min Engrs*—May, 1907. No. 85274.

Blast Furnace Practice at Blaenavon. George Forster Martin. Read before the S. Wales Inst. of Engrs. Describes the important features and the method of working. Ills. 2000 w. *Ir & Coal Trds Rev*—Jan. 18, 1907. No. 82002 A.

Iron Manufacture in Australia. Illustrated description of the Sandford Ltd.

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blast furnace, at Lithgow, N. S. W., and its operation. 2500 w. *Aust Min Stand*—May 29, 1907. No. 85491 B.

The Blast Furnace Practically and Theoretically Considered. W. J. Foster. Read before the Saffordshire Ir. & St. Inst. An examination of the processes involved in working a blast furnace. 5500 w. *Ir & Coal Trds Rev*—April 19, 1907. No. 84009 A.

The Operation of the Iron Blast Furnace. Bradley Stoughton. Outlines the working of the furnace when in blast, giving an account of some difficulties encountered. 2000 w. *Eng & Min Jour*—Aug. 17, 1907. No. 86420.

The Chemistry of the Iron Blast-Furnace. Bradley Stoughton. Traces the successive chemical reactions which occur as iron ore is reduced to pig iron. Ills. 1500 w. *Eng & Min Jour*—Aug. 3, 1907. No. 86104.

Calculation of Furnace Charges. Regis Chauvenet. Suggestions, showing how a certain class of problems of this nature can be solved by the simple equations. 1500 w. *Min Rept*—July 18, 1907. Serial. 1st part. No. 85819.

The Effect of Moisture in the Atmosphere Upon the Economical Working of Blast Furnaces. Horace Allen. A discussion of the economical results from drying the blast. 1800 w. *Mech Engr*—March 23, 1907. No. 83412 A.

Address on the Effect of Air and Moisture on Blast-Furnaces. Joseph Dawson. Reprint of an address at meeting of ironmasters on June 11, 1800. 7500 w. *Jour Ir & St Inst*—No. II, 1907. No. 87362 N.

Alabama Iron Manufacture. John J. Porter. Discusses possible economies in the blast furnace. 2500 w. *Ir Age*—Feb. 7, 1907. No. 82162.

Zinc Oxide in Iron-Ores, and the Effect of Zinc in the Iron Blast-Furnace. John J. Porter. Explains the difficulties that arise from the presence of zinc. 2500 w. *Bul Am Inst of Min Engrs*—Sept., 1907. No. 87725 C.

The Gas-Producer as an Auxiliary in Iron Blast-Furnace Practice. R. H. Lee's paper is discussed. Ills. 1200 w. *Bul Am Inst of Min Engrs*—May, 1907. No. 85275.

The Efficiency of Furnaces. Dr. Joseph W. Richards. Considers thermal efficiency, both absolute and relative, and also discusses economic efficiency as related to minimum cost. 3500 w. *Jour Fr Inst*—Feb., 1907. No. 82062 D.

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## Blast Furnaces

## IRON AND STEEL

## Colorado

Steel Works. Lawrence Lewis. A description of the five stacks of the Colorado Fuel and Iron Company, at Pueblo, with details of construction, the equipment and methods of operation. Ills. 2500 w. *Eng & Min Jour*—Jan. 26, 1907. No. 81956.

The New Blast Furnace Plant of the Frothingham Iron and Steel Company. Illustrated detailed description. 3500 w. *Ir & Coal Trds Rev*—Jan. 25, 1907. No. 82159 A.

The Republic Iron & Steel Co.'s New Furnaces. Illustrates and describes in detail the new Haselton furnace plant at Youngstown, O. 2500 w. *Ir Trd Rev*—April 18, 1907. No. 83791.

Blast Furnaces at Vajda-Hunyad. Illustrated description of works in the south-east of Hungary, controlled by the Government. 1200 w. *Engr, Lond*—Sept. 6, 1907. No. 87083 A.

The Lackawanna Steel Co.'s New Furnace. Illustrated detailed description, with history of the erection of stack No. 7, at Buffalo, N. Y. A record of rapid construction and the solution of interesting engineering problems. 2500 w. *Ir Trd Rev*—Feb. 21, 1907. No. 82518.

The Irondale Furnace Near Seattle, Wash. H. Cole Estep. Gives the history and illustrated description of this blast furnace on the Pacific Coast. 2500 w. *Ir Trd Rev*—Sept. 19, 1907. No. 87119.

Chattanooga Furnace of the Southern Steel Co. Illustrated description of a modern blast-furnace plant. 1300 w. *Ir Trd Rev*—Jan. 3, 1907. No. 81402.

Cold Blast Charcoal Furnace in Bald Eagle Valley, Pa. Illustrated description of an old blast furnace of the Curtin Iron Co., still in operation. 1600 w. *Ir Trd Rev*—Sept. 12, 1907. No. 86888.

See also **Blowing Engines**, **Dry-Air Blast**, **Flue Dust**, **Induced Draught**, **Slags**, **Smelters and Steel Works**, under **IRON AND STEEL**; **Contractor's Plant**, under **CIVIL ENGINEERING**, **CONSTRUCTION**, and **Conveyors**, under **MECHANICAL ENGINEERING**, **POWER AND TRANSMISSION**.

## Blowholes.

Blowholes and Pipes in Steel (Blasen und Lunker in Flusseisen und Flussstahl). Wilhelm Kusel. Illustrated discussion of these defects in steel ingots and blocks, and methods for preventing them. Serial. 2 parts. 5000 w. *Oest Zeitschr f Berg u Hüttenwesen*—Nov. 17 and 24, 1906. No. 81113 each D.

Blow Holes in Steel Ingots. E. von Maltitz. Gives the writer's views and ex-

perience in regard to the formation of blow-holes, their prevention, and related matters. 14600 w. *Bul Am Inst of Min Engrs*—Sept., 1907. No. 87722 D.

## Blowing Engines.

Parson's Turbine Blower as a Blast-Furnace Blowing Engine (Das Turbinengebläse von C. A. Parsons als Hochofengebläsemaschine). Julius Fürstenau. Enumerates and gives details of the plants at which this blower is used, with results of tests and remarks on accessory devices, etc. Ills. 5500 w. *Zeitschr d Ver Deutscher Ing*—July 20, 1907. No. 86274 D.

The Parsons Turbo-Blower for Blast Furnaces. Illustrated description of an installation at the Trzynietz furnace plant, as given by Julius Fuerstenau, in the *Zeit. des Ver. Deut. Ing.* 1500 w. *Ir Age*—Aug. 22, 1907. No. 80499.

See also same title, under **MECHANICAL ENGINEERING**, **POWER AND TRANSMISSION**.

## Cast Iron.

Cast Iron. E. Adamson. Discusses the effect of temperature on the chemistry of cast iron, grading by fracture, the influence of sulphur, phosphorus, manganese, and other constituents. Plate. 8000 w. *Jour W of Scotland Ir & St Inst*—Nov., 1906. No. 82621 N.

## Chrome.

Notes on the Production and Uses of Canadian Chrome. W. H. Edwards. Information concerning the chrome iron found in Quebec, the method of mining and treating the ore, the uses, etc. 1000 w. *Jour Can Min Inst*—1906. No. 83800 N.

## Colorado.

The Colorado Fuel and Iron Company. Lawrence Lewis. An illustrated article giving the history of the development of this company, which is the largest industrial corporation west of Chicago. Map. 2300 w. *Eng & Min Jour*—Dec. 29, 1906. No. 81313.

The Resources and Strategic Position of the Colorado Fuel and Iron Company. Lawrence Lewis. An account of the development of this industry in the Rocky Mountain region, its water supply, coal and iron mines, production and earnings, with illustrations of the works. 3000 w. *Eng & Min Jour*—Jan. 12, 1907. No. 81602.

The Raw Materials for Steel Making at Pueblo. An illustrated article describing the sources of supply of ore, limestone, and coke; the methods of handling, yards, storage bins, and conveying ma-

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## Corrosion

chinery. 2000 w. Eng & Min Jour—Jan. 19, 1907. No. 81696.

## Corrosion.

The Corrosion of Acid and Basic Steel. Alexander G. Fraser. Synopsis of a paper read before the Iron & Steel Inst. Gives the results of some experiments to determine the relative rates of corrosion. Ills. 1600 w. Ir Age—April 18, 1907. No. 83755.

## Cuba.

Barite Associated with Iron Ore in Pinar del Rio Province, Cuba. Charles Catlett. Describes rather unusual deposits found near the little village of Francisco. 500 w. Bul Am Inst of Min Engrs—July, 1907. No. 85927.

The Mayari Iron Ore District of Cuba. Information concerning this remarkable deposit, estimated to contain over 500,000,000 tons, and some of the problems in the handling and treatment of the ore. Maps and Ills. 4500 w. Ir Age—Aug. 15, 1907. No. 86377.

## Dry-Air Blast.

Dry Air in Ore Reduction. Jos. H. Hart. Briefly explains the deterrent effects of moisture in the air in industrial applications, the existing methods of eliminating it, with their first costs and maintenance, and the increased economies that result. 1500 w. Min Wld—March 16, 1907. No. 83086.

Notes on the Gayley Dry-Air Blast-Process. Discussion of the paper by C. A. Meissner. 4500 w. Bul Am Inst of Min Engrs—July, 1907. No. 85922.

## Electro-Metallurgy.

Electric Smelting Furnaces (Elektrische Schmelzöfen). Hermann Wilda. A descriptive and historical review of their development. Ills. 5000 w. Elektrotech u Polytech Rundschau—Aug. 7, 1907. No. 86963 D.

The Stassano Thermo-Electric Furnace. Ernest Stassano. Illustrates and describes two furnace types, which produce malleable steel with a thermal efficiency of more than 50 per cent. 2200 w. Eng & Min Jour—June 15, 1907. No. 85048.

Electric Smelting of Iron Ore in California. Gives a summary of an article describing the application of the Héroult Process to the smelting of iron from the large magnetite deposits. Also an editorial "Electric Heat versus Heat from Fuel." 2000 w. Elec Chem & Met Ind—Aug., 1907. No. 86339 C.

The Héroult Electric Steel Process in Practice. Extracts from a paper by Prof. Eichhoff relating to the Héroult furnace

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and process, dealing with the conditions, cost, quality, etc. Ills. 2500 w. Ir Age—Jan. 31, 1907. No. 82015.

The Electrical Smelting of Iron Ore. R. L. Phelps. An illustrated description of the plant installed on the Pitt River, California. 1500 w. Min & Sci Pr—July 20, 1907. No. 85963.

Electrical Smelting of Iron Ore. Brief account of the recent successful experimental run of the Héroult electrical smelting plant in Shasta Co., Cal. 600 w. Min Rept—Aug. 8, 1907. No. 86329.

The Electrothermic Reduction of Iron Ores. Albert E. Greene and Frank S. MacGregor. Results of an experimental investigation carried out at the laboratory of the Massachusetts Inst. of Technology on the electrothermic reduction of iron ores containing titanium. Ills. 3300 w. Elec-Chem & Met Ind—Sept., 1907. No. 86840 C.

The Production of Pig Iron in the Electric Furnace (Die Erzeugung von Roheisen im Elektrischen Ofen). B. Neumann. Illustrates and describes various types of furnace and reviews recent progress and investigation in electric smelting. 3300 w. Stahl u Eisen—Aug. 28, 1907. No. 86936 D.

Preliminary Report on the Experiments on the Electric Smelting of Canadian Iron Ores, Carried Out Under Government Auspices at Sault Ste. Marie (Vorläufiger Bericht über die in Sault St. Marie unter dem Protektorat der Regierung angestellten Versuche zur Schmelzung Kanadischer Eisenerze Vermittels der Elektrothermischen Methode). Dr. Eugen Haanel. Ills. 1200 w. Serial. 1st part. Elektrochem Zeitschr—April, 1907. No. 84132 G.

The Production of Iron in the Electric Furnace (Die Herstellung von Roheisen im Elektrischen Ofen). Fritz Cirkel. Review of experiments made by Dr. Haanel at Sault Ste. Marie. Tables and illustration. 1000 w. Stahl u Eisen—Nov. 15, 1906. No. 80680 D.

Some Laboratory Experiments in Making Steel Directly from Iron Ores with the Electric Furnace. J. W. Evans. Illustrates and describes the furnaces used, the methods and results. Discussion. 2500 w. Jour Can Min Inst—1906. No. 83811 N.

See also same title, under ELECTRICAL ENGINEERING, ELECTRO-CHEMISTRY.

## Flue Dust.

The Settling and Collection of Dust in Flues. I. S. Austin. Considers the prin-

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ciples applicable to the settling of dust accompanying the gases from furnaces, and their analogy to the settling of sand and slime in settling tanks. 800 w. *Min & Sci Pr*—May 5, 1907. No. 84679.

### Gas Fuel.

The Use of Producer Gas in the Chemical Industries. Oskar Nagel. States the general advantages of producer firing, and discusses its application to reverberatory furnaces, and to lime-kiln firing. Ills. 900 w. *Elec-Chem & Met Ind*—Sept., 1907. No. 86837 C.

### Germany.

Mining Methods at the Larger Minette Iron Mines of the Diedenhofen District in Alsace-Lorraine (Die Abbaueverfahren auf den Grösseren Minettegruben des Bergreviers Diedenhofen in Elsass-Lothringen). Dr. Ahlburg. Illustrated description of underground work. 5000 w. *Glückauf*—Nov. 24, 1906. No. 81110 D.

Treatment of Iron Ore (Die Bewertung der Eisenerze). M. Drees. Outline of present day German methods. 2300 w. *Stahl und Eisen*—Mar. 6, 1907. No. 82955 D.

The Iron-Ore Deposits and Iron Industry in Würtemberg (Die Eisenerzlagerstätten und die Eisenindustrie Würtembergs). C. Geiger. Information compiled from the Würtemberg Statistical Annual. Map. 2800 w. *Stahl u Eisen*—April 24, 1907. No. 84131 D.

### Grading.

The Grading of Pig Iron for the Foundry. A discussion of the system of pig-iron classification in use in England, considering the varying nature of the product, and the unreliability of fracture as an indication of the quality of the iron. 2400 w. *Engng*—Nov. 16, 1906. No. 80724 A.

### Hardening.

Mistakes in Hardening Processes and Their Causes (Härtefehler und Ihre Ursache). J. H. Heckel. Address at the Vienna Exhibition of the Hardening and Tempering Industry, giving a general account of the heat treatment of steel 4000 w. *Oest Zeitschr f Berg u Hüttenwesen*—Oct. 20 and 27, 1906. No. 81111 each D.

Hardening and Annealing by Electricity. Illustrated description of an electrically heated furnace for hardening steel, intended to replace gas and coke fires, or the lead and salt baths. 900 w. *Elec Rev, Lond*—Nov. 23, 1906. No. 80828 A.

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#### Impurities.

The Nonmetallic Impurities in Steel. Reviews the investigations by E. F. Law, of London. 1600 w. *Ir Age*—Aug. 22, 1907. No. 86501.

#### India.

The Manufacture of Iron and Steel in India. Facts and figures taken from the comprehensive report of C. M. Weld and Mr. Perrin, favorable to the industry. Discusses the site selected, its resources, the type of plant, and probable cost of manufacture. 4000 w. *Ir & Coal Trds Rev*—Dec. 7, 1906. No. 81035 A.

#### Induced Draught.

Induced Draught, with Hot-Air Economizers, for Steel Works and Blast Furnace Boilers. A. J. Capron. Describes a system that has been in use for marine purposes for about ten years, and recently has been coming into extensive use for land boilers. Ills. 3000 w. *Ir & Coal Trds Rev*—May 10, 1907. No. 84616 A.

#### Ironstone.

The Ironstone of Cleveland. Arthur E. Pratt. Describes the geology and mining methods, and the calcination. 4500 w. *Inst of Min & Met, Bul* 31—April 11, 1907. No. 84015 N.

#### Laboratory.

The Creation of a Laboratory for a Modern Ironworks (Wie muss das Hauptlaboratorium eines Neuzeitlichen Eisenhüttenwerks Beschaffen sein). August Kaysser. Discusses the various departments necessary, the work to be done in each, apparatus, etc. Ills. 5300 w. *Serial*. 2 parts. *Stahl u Eisen*—Sept. 11 and 18, 1907. No. 87616 each D.

#### Lake Superior.

Some Gogebic Mines as Seen in 1906. Gives a comparison of the output of the active mines, and an illustrated description of some of the methods of mining, and facts of general interest. 3800 w. *Ir Trd Rev*—Jan. 31, 1907. No. 82064.

Progress on the Gogebic Range. Report of conditions at the various iron mines, the output, development, improvements, etc. 2500 w. *Ir Trd Rev*—Sept. 19, 1907. No. 87120.

Mining Methods on the Gogebic Iron Range. Reginald Meeks. Describes the exploratory methods, the steel shafts and headframes which are replacing wooden construction, etc. Ills. 1400 w. *Eng & Min Jour*—Aug. 10, 1907. No. 86332.

Deep Mining on the Gogebic Range. Discusses the real value and extent of the iron deposits being disclosed in this Lake

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Superior region, and describes features of the different properties. Ills. 3000 w. Ir Trd Rev—Jan. 17, 1907. No. 81681.

The Geology of the Cuyuna Iron Range, Minnesota. C. K. Leith. Describes this district of the Lake Superior region. 2500 w. Ec Geol—March, 1907. No. 83342 D.

The Cuyuna Iron Range. Newton H. Winchell. Describes the geological structure. 2500 w. Ec-Geol—Sept., 1907. No. 87898 D.

Coleraine District, Mesabi Range. Illustrates and describes a washing plant for low-grade iron ore, and the development of the ore beds. 1800 w. Min Wld—July 6, 1907. No. 85476.

Development in the Coleraine District. An illustrated account of the character and size of the ore deposits in these iron mines, the new development, etc. The Gilbert mine is described. 2000 w. Ir Trd Rev—June 20, 1907. No. 85148.

The Problem of Mining Sandy Ore at Coleraine. An illustrated account of two mining towns being built by the Steel Corporation, the unusual conditions, methods of washing the ore, etc. 3000 w. Ir Trd Rev—Dec. 6, 1906. No. 80865.

The Iron Mines at Biwabik, Minn. This is one of the big mines of the Mesabi. Other properties in the vicinity are also described. Ills. 1800 w. Ir Trd Rev—Nov. 1, 1906. No. 80165.

The Iron-Ore Mines of the Mesabi Range. Reginald Meeks. An illustrated account of mines opened in 1892, which now produce 62 per cent. of the total ore from the northern ranges. 2200 w. Eng & Min Jour—Aug. 3, 1907. No. 86101.

Underground Mining on the Mesabi Iron Range. Rush T. Sill. Brief description of the method of mining. 1100 w. Min Wld—Dec. 1, 1906. No. 80779.

The Caving System on the Menominee Range. Reginald Meeks. Describes the low-grade iron ore that must be mined economically, and the block-caving, sub-level, and back-stoping methods used. Ills. 2500 w. Eng & Min Jour—July 20, 1907. No. 85838.

Developments in the Menominee Range. An illustrated account of the mines of this Lake Superior district and their equipment. 2200 w. Ir Trd Rev—Oct. 17, 1907. No. 87750.

Iron Mining Practice on the Marquette Range. Reginald Meeks. An illustrated account of methods used. The caving system predominates, but milling and the inverted cone methods are also used where

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conditions require. 1500 w. Eng & Min Jour—June 15, 1907. No. 85046.

Geology of the Ely Trough Iron-Ore Deposits. Clarence E. Abbott. Abstract of a paper read before the Lake Superior Min. Inst. Describes these orebodies at Ely, Minnesota, as replacement deposits inclosed in a greenstone trough under a cap of jaspilite. Ills. 4000 w. Eng & Min Jour—March 30, 1907. No. 83353.

Iron Ore in Crow Wing County, Minn. Dwight E. Woodbridge. An account of recent discoveries of merchantable ore. 1500 w. Eng & Min Jour—Oct. 26, 1907. No. 87894.

## Lapland Ores.

The Geology and Origin of the Lapland Iron Ores. Dr. O. Stutzer. Describes the geology of Lapland, and considers the more important occurrences of iron ore, discussing their origin. Plates and bibliography. 32000 w. Jour Ir & St Inst—No. 11, 1907. No. 87360 N.

## Magnetic Concentration.

Utilizing Impure Iron Ores. Illustrated description of the Gröndel briquetting process for low-grade ores. 1400 w. Min Wld—March 16, 1907. No. 83089.

Magnetic Separation of Iron Ores by the Gröndal Process. P. McN. Bennie. Read before the Can. Min. Inst. (Slightly abridged.) An illustrated detailed description of this concentrating process. 3800 w. Elec-Chem & Met Ind—April, 1907. No. 83540 C.

Notes on Some Recent Experiments on the Magnetic Concentration of Iron Sands from the Lower St. Lawrence. John F. Robertson. Abstract of a paper before the Can. Min. Inst. Describes experiments made to cheaply overcome the difficulties due to the low percentage of iron and the presence of a much greater amount of titanium than is considered permissible. 2200 w. Min Rept—Nov. 8, 1906. No. 80183.

Magnetic Separation of Iron Ore in Sweden. G. Walfrid Petersson. Illustrates and describes methods and machines used. Twenty-one plants are in operation, producing concentrates containing 63 to 65 per cent. iron from ore carrying 25 to 30 per cent. 4500 w. Eng & Min Jour—May 11, 1907. No. 84312.

## Malleable Iron.

Beginning of American Malleable Iron. Gives the history of the work of Seth Boyden, and those associated with him, and of the early experiments in the Newark, N. J., foundry. Ills. 2800 w. Ir Trd Rev—Nov. 8, 1906. No. 80316.

Manufacture of Malleable Iron. G. A.

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## Manganese Ore

Akerlind. Read before the Scandinavian Tech. Soc., Chicago. A review of the manufacture, physical properties, and treatment. 3000 w. Foundry—May, 1907. No. 84057.

## Manganese Ore.

The Occurrence of Manganese Iron Ore at the Elisenhöhe at Bingerbrück (Das Manganeisenerzvorkommen der Grube Elisenhöhe bei Bingerbrück). Herr Jüngst. A detailed description of the geology of this deposit in Germany, illustrated with plans and numerous sections. 2500 w. Glückauf—Aug. 10, 1907. No. 86939 D.

## Metallography.

Metallographic Investigations in Foundry Work (Metallographische Untersuchungen für das Giessereiwesen). E. Heyn. Address before the German Foundrymen's Convention on the constitution of iron, with diagrams and micrographs. Serial. 2 parts. 6000 w. Stahl u Eisen—Nov. 1 and 15, 1906. No. 80674 each D.

Prof. Heyn's Experiments on the Tempering and Annealing of Steel (Les Expériences du Prof. Heyn sur la Trempe et le Revenu des Aciers). F. Osmond. Discussion of experiments to determine troostite and sorbite and other constituents of steel. Diagrams and tables. 2500 w. Rev de Métallurgie—Nov., 1906. No. 80636 E + F.

Change of Structure in Iron and Steel. William Campbell. Considers the changes which take place in the iron-carbon series, as disclosed by recent investigations. Ills. 4000 w. Jour Fr Inst—June, 1907. No. 85137 D.

Crystallization of Iron (Sur la Cristallisation du Fer). F. Osmond and G. Carraud. Comprehensive study of the crystal forms under different conditions. Illus. 12700 w. Bulletin de la Société d'Encouragement pour l'Industrie Nationale—Original Memoirs—Dec. 1, 1906. No. 82910 E + F.

Heyn's Experiments on the Tempering and Annealing of Steel (Les Expériences du Prof. Heyn la Trempe et le Revenu des Aciers). M. F. Osmond. Diagrams and tables. 3500 w. Bull de la Soc d'Encouragement pour l'Industrie Nationale—Original Memoirs—Dec. 1, 1906. No. 82913 E + F.

The Microstructure of Steel (Das Kleingefüge des Stahles). H. von Jüptner. Illus. Serial. 1st instalment. 1900 w. Oesterr Zeitschr f Berg und Hüttenwesen—March 30, 1907. No. 83661 D.

Nitrogen in Iron (Über die Bedeutung des Stickstoffes im Eisen). Hjalmar

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Braune. An address before the "Jern-Kontoret," in Sweden, giving the results of chemical and physical researches into the effects of nitrogen on iron. Ills. Serial. 1st part. 3500 w. Stahl u Eisen—Nov. 15, 1906. No. 80678 D.

The Effect of Vanadium in Steel. E. T. Clamage. Explains the effect on nitrogen, oxygen, and carbon and other important effects. 2000 w. Ir Trd Rev—Sept. 26, 1907. No. 87256.

The Present Condition of Our Knowledge of the Hardening and Cooling Phenomena in Iron-Carbon Alloys (Ueber den Augenblicklichen Stand unserer Kenntnisse der Erstarrungs- und Erhaltungsvorgänge bei Eisenkohlenstofflegierungen). P. Goerens. Illustrated by micro-photographs. 2500 w. Stahl u Eisen—July 24, 1907. No. 86229 D.

A New Iron-Carbon Phase, Osmondite. Henry M. Howe. An account of the discovery of this new and important iron-carbon phase, showing the results, and studying the properties. 3000 w. Elec Chem & Met Ind—Sept., 1907. No. 86834 C.

The Heat Treatment of Metallurgical Products (Traitement Thermique des Produits Métallurgiques). Léon Guillet. Account of experiments with various metals and alloys, and discussion of results. Diagram and tables. 1 plate of micrographs. 10000 w. Mem Soc Ing Civ de France—Oct., 1906. No. 81125 G.

Metallography (La Metallografia). Giulio Revere. A complete review of metallographic researches and knowledge, beginning with a consideration of iron-carbon alloys. Ills. 3300 w. Serial. 1st part. II Monit Tech—Aug. 20, 1907. No. 86907 D.

Copper in Iron (Kupfer im Eisen). H. Wedding. Article illustrated with microphotographs showing the effect on the structure of cast iron by alloying it with copper. 900 w. Stahl und Eisen—Dec. 1, 1906. No. 81802 D.

## Metallurgy.

Application of the Laws of Physical Chemistry in the Metallurgy of Iron. Baron H. von Juptner. Read before the Ir. & St. Inst. at Vienna. Deals with the doctrine of chemical equilibrium as applied to metallurgical chemical processes. 5800 w. Ir & Coal Trds Rev—Sept. 27, 1907. No. 87703 A.

Physical Chemistry in Metallurgy. Dr. Alex. Findlay. Abstract of a paper read before the Iron & Steel Inst. Shows how physical chemistry explains the laws of the relationships existing between the

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different structures and their formation. 2200 w. *Min Rept*—April 11, 1907. No. 83723.

Unsolved Problems in Metallurgy. Robert Abbott Hadfield. "James Forrest" lecture. Deals especially with the modern metallurgy of iron and steel, its problems and means of solving them. 12000 w. *Inst of Civ Engrs*—May 2, 1906. No. 82033 N.

### Meteoric Iron.

Steel and Meteoric Iron. Prof. Frederick Berwerth. Read before the Ir. & St. Inst. at Vienna. Aims to show in a general way that meteoric iron and steel works steels are results of essentially similar chemical and physical causes. 3500 w. *Engng*—Oct. 4, 1907. No. 87594 A.

### Mexico.

The Iron Deposits of Cerro de Mercado, Durango, Mexico. Edward Halse. Historical and descriptive sketch. 1800 w. *Min Jour*—Sept. 7, 1907. No. 87070 A.

### Mixers.

Gas Fired Tilting Pig-Iron-Mixers. Illustrated description of a tilting-mixer built by the Cologne Maschinenbau A. G. designed for the reception of 150 tons of molten pig. 2000 w. *Ir & Coal Trds Rev*—Nov. 30, 1906. No. 80930 A.

### Newfoundland.

See same title, under **COPPER**.

### New South Wales.

Iron and Steel Industry of New South Wales. Brief account of the industry and iron ore resources of Australia, with illustrated description of the Eskbank Works. 1200 w. *Ir & Coal Trds Rev*—July 5, 1907. No. 85599 A.

### New York.

Magnetite Mines at Lyon Mountain, N. Y. D. H. Newland and N. V. Hansell. Illustrates and describes this district, its geology, nature of the ore and methods of mining. 2800 w. *Eng & Min Jour*—Nov. 10, 1906. Serial. 1st part. No. 80365.

### Nomenclature.

Iron and Steel Nomenclature. Gives the metallurgical definitions presented by the committee at the Brussels Congress of the International Association for Testing Materials, which are to be submitted to the Iron and Steel Inst., and other organizations for indorsement. 2000 w. *Ir Age*—March 28, 1907. No. 83293.

Uniform Nomenclature for Iron and Steel (Einheitliche Benennung von Eisen und Stahl). Dr. H. Wedding. Discusses

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the work of the International Congress for the Testing of Engineering Materials at Brussels in 1906, with table showing where a uniform nomenclature should be adopted. 3000 w. *Stahl u Eisen*—May 29, 1907. No. 84942 D.

### Nova Scotia.

Prospecting for Iron Ore in the Tarbrook Iron District, Annapolis County, Nova Scotia. W. F. C. Parsons. Brief description of the territory, deposits, and development. 1000 w. *Jour Can Min Inst*—1906. No. 83799 N.

### Ontario.

Iron Mining in Northern Ontario. A. B. Willmott. Brief illustrated description of the more important exploratory work of the past year. 1300 w. *Can Min Jour*—March 15, 1907. No. 82859.

### Open Hearth.

The Kirkwood Fuel Oil Burner. Illustrates and describes an equipment for open hearth steel furnaces. 800 w. *Ir Age*—Jan. 17, 1907. No. 81663.

Making Open Hearth Steel at Pueblo. Lawrence Lewis. The basic and acid furnaces at the Colorado Fuel and Iron Company's Steel Works are illustrated and described. 3300 w. *Eng & Min Jour*—Feb. 23, 1907. No. 82567.

Steel Making at Pueblo. Lawrence Lewis. Illustrates and describes the reconstructed plant of the Colorado Fuel & Iron Co., its equipment and capacity. 2000 w. *Eng & Min Jour*—Feb. 2, 1907. No. 82096.

A Modern Acid Open Hearth Steel Casting Plant. Illustrated detailed description of the new department of the National Foundry Co., Erie, Pa. 2200 w. *Foundry*—May, 1907. No. 84056.

Cost of Equipping Open Hearth Steel Foundries. W. M. Carr. Gives an estimate made on the basis of daily capacity. 800 w. *Foundry*—May, 1907. No. 84059.

Thermal Efficiency of Open-Hearth Furnaces. Considers the total heat available for the purposes of the furnace, and the distribution. 4500 w. *Elec-Chem & Met Ind*—March, 1907. No. 82872 C.

Fiftieth Anniversary of the Regenerative Furnace (Zum fünfzigjährigen Jubiläum des Regenerativofens). L. Beck. Historical account of the development of the Siemens Martin process. 4500 w. *Stahl und Eisen*—Dec. 1, 1906. No. 81800 D.

Contribution to the Metallurgy of the Siemens Martin Process (Beitrag zur Metallurgie des Martinprozesses). Theodor Naske. Comprehensive account of



## MINING AND METALLURGY

### Ore Reserves

researches on this subject. Diagrams. Serial. 4 parts. 12000 w. Stahl und Eisen—Jan. 30, Feb. 6, Feb. 13, and Feb. 20, 1907. No. 82951 each D.

### Ore Reserves.

The Iron Ore Supplies of Great Britain. T. Good. A discussion of the British iron ore resources, claiming there are vast reserves available. 2500 w. Cassier's Mag—May, 1907. No. 84050 B.

The Supplies and Reserves of Iron Ores. John Birkinbine. Considers the features which demand attention in determining the probable exhaustion of supplies of minerals, and reviews information available concerning the deposits, discussing improvements in methods which have increased the production. Concludes there is no cause for present anxiety. 5000 w. Can Min Jour—April 15, 1907. No. 83797.

Iron Ore Reserves of the United States. John Birkinbine. A comparison of American supplies with European resources. A review of the iron ore situation in the United States. 2500 w. Cassier's Mag—June, 1907. No. 85179 B.

### Pennsylvania.

The Iron Mines at Cornwall, Pennsylvania. Prof. William E. Ford. An illustrated article giving the location and history of these mines, describing the deposits, methods of mining, and other matters of interest. 1400 w. Yale Sci M—Jan., 1907. No. 82031 C.

### Piping.

Extract of Report on Methods Used to Avoid Piping in Steel Ingots, as Applied in the Hungarian Government Steel Foundries at Diosgyor. Albert Obholzer. An illustrated account of the Anti-Piping Thermit method and results obtained. 1600 w. Jour Fr Inst—July, 1907. No. 85700 D.

The Influence of the Conditions of Casting on Piping and Segregation, as Shown by Means of Wax Ingots. H. M. Howe, and Bradley Stoughton. Experimental investigations on wax ingots concerning the influence of certain conditions of casting upon the size and condition of the pipe, and the position of the segregation, in steel ingots. Ills. 4800 w. Bul Am Inst of Min Engrs—July, 1907. No. 85921 C.

Piping and Segregation in Steel Ingots. A discussion of the paper of Prof. Howe, presented at the London meeting, July, 1906. 3000 w. Bul Am Inst of Min Engrs—July, 1907. No. 85925.

The Avoidance of Piping (Zur Frage

### IRON AND STEEL

der Vermeidung von Lunkerbildung). Adalbert Obholzer. A description of the results obtained at the Diosgyor steel-works, Hungary, from the use of thermit. Ills. 2300 w. Serial. 1st part. Stahl u Eisen—July 31, 1907. No. 86231 D.

See also Blowholes and Segregation, under IRON AND STEEL.

### Production.

Diagram of the Processes and Products of Iron and Steel Manufacture. Albert Sauveur. Gives a diagram drawn by H. M. Boylston, of Harvard University, outlining the information it yields. 1200 w. Ir Trd Rev—May 9, 1907. No. 84271.

Retort Charging and Discharging Machine. Illustrated description of a machine for use in connection with continuous horizontal retorts having two mouths. 800 w. Engr, Lond—April 19, 1907. No. 84008 A.

The Iron Industry in 1906 (Das Eisenhüttenwesen im Jahre 1906). B. Neumann. A statistical review of iron production in the leading countries of the world during 1906, with particular reference to Germany's position in the iron trade. 6300 w. Glückauf—Aug. 31, 1907. No. 86942 D.

American Pig Iron Production. H. V. Luty. A review of the production since the beginning of 1905, showing the capacity of the United States, and the future increases and prospects. 2500 w. Ir & Coal Trds Rev—Sept. 13, 1907. No. 87182 A.

### Pyrite.

The Oxidation of Pyrite. Alexander N. Winchell. Describes an attempt to produce experimental evidence that natural circulating waters will oxidize pyrite. 1200 w. Ec Geol—April, 1907. No. 85190 D.

### Pyrometry.

See same title, under MECHANICAL ENGINEERING, MEASUREMENT.

### Quebec.

Mining Possibilities in the Province of Quebec. Fritz Cirkel. Deals principally with the development of the magnetic iron resources. 2500 w. Can Min Jour—April 1, 1907. No. 83513.

### Rails.

See same title, under RAILWAY ENGINEERING, PERMANENT WAY AND BUILDINGS.

### Rolling Mills.

Notes on Rolling Mill Work. B. H. Reddy. Describes rolls for the production of flats, illustrating a 3-high set of rolls

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## Rolling Mills

designed by the writer for rolling skelp. 1500 w. *Ir Trd Rev*—June 27, 1907. No. 85339.

Electric Power in Iron and Steel Works. D. Selby Bigge. Read before the *Ir. & St. Inst.* On the development of electricity in the iron and steel industries, with special reference to its latest application to reversing rolling mills of high power. Explains the advantages and points of special interest, giving a description of the Hildegard Works. Ills. 8500 w. *Engng*—May 10, 1907. No. 84447 A.

The Development of Electricity in the Iron and Steel Industries, with Special Reference to Its Latest Application to Reversing Rolling Mills of High Power. D. Selby Bigge. Illustrations and diagrams. 8500 w. *Ir & Coal Trds Rev*—May 10, 1907. No. 84612 A.

Electrically Driven Reversing Rolls at the Hildegardhütte Steel Works (Commande Electrique d'un Laminier Réversible). G. de Taube. Illustrated description of these works in which the Ilgner system of driving is used. 3500 w. *Génie Civil*—June 8, 1907. No. 85614 D.

A Modern Mill (Ein Modernes Platten-Triowalzwerk). Illustrated description of a plant at Jünkerath, Germany. Plate. 1500 w. *Stahl u Eisen*—May 8, 1907. No. 84937 D.

The Riverside Metal Company's New Rolling Mill Plant. Illustrates and describes a new hot and cold rolling mill plant recently installed at Riverside, N. J. 2000 w. *Ir Age*—July 25, 1907. No. 85879.

Use of Electric Power in Ironworks (Die elektrische Kraftübertragung in Hüttenwerken). F. Janssen. Comprehensive account of European practice in use of electric driving. 7000 w. *Stahl und Eisen*—Feb. 20, 1907. No. 82953 D.

First Electrical Reversing Apparatus Installed at the Hildegard Works, Austria (Der erste elektrische Reversierstrassenantrieb, ausgeführt auf der Hildegardhütte). D. Geyer. Illus. Serial. 2 parts. 4600 w. *Stahl und Eisen*—Jan. 23 and 30, 1907. No. 82947 each D.

The First Electrically Driven Reversing Mill. Illustrates and describes the characteristics of this mill in Austrian Silesia, and the electrical apparatus, and discusses the operating curves. 2800 w. *Ir Age*—April 25, 1907. No. 83912.

A Bar Iron and Light Rail Mill. Plan and description of interesting features of a mill at Roanoke, Va. 2200 w. *Ir Age*—Sept. 12, 1907. No. 86880.

A Rolling Mill of the Pacific Coast. H. Cole Estep. Gives the history and a brief

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illustrated description of the plant of the Seattle Steel Co. 2000 w. *Ir Trd Rev*—Sept. 26, 1907. No. 87255.

The Bethlehem Steel Company's Recent Extensions. Illustrated description of the new Saucon plant at South Bethlehem, Pa., and the shapes to be rolled. 4000 w. *Ir Age*—Nov. 1, 1906. No. 80154.

The Bethlehem Steel Company's New Plant. Illustrated description of the 28-in. rail mill and the 28-in. structural mill at South Bethlehem, Pa. 3500 w. *Ir Age*—Sept. 26, 1907. No. 87227.

See also Steel Plates, Steel Works and Tin Plates, under **IRON AND STEEL**; Round Bars, under **MECHANICAL ENGINEERING, MACHINE WORKS AND FOUNDRIES**; Electric Driving, under **MECHANICAL ENGINEERING, POWER AND TRANSMISSION**; and Indicators and Rolling Mill Engines, under **MECHANICAL ENGINEERING, STEAM ENGINEERING**.

## Salisbury Iron.

The Iron Ores of the Salisbury District of Connecticut, New York and Massachusetts. William Herbert Hobbs. Gives information in regard to the history, geology, distribution and mines of these limonite deposits, discussing their origin. 6000 w. *Ec Geol*—March, 1907. No. 83343 D.

## Scrap.

The Growth of the Scrap Movement. B. E. V. Luty. Shows the growth of scrap consumption, the uses; describes the re-rolling operations, and other processes of interest. 3500 w. *Ir Trd Rev*—May 30, 1907. No. 84676.

## Segregation.

Crystallization and Segregation of Steel Ingots. Summary of the results of about 30 years as given by J. E. Stead in two recent addresses on the above subject, and the conclusions from his own investigation. 2600 w. *Ir & Coal Trds Rev*—Nov. 2, 1906. No. 80363 A.

Segregation in Steel. Abstract of a paper by John E. Stead, read at the *Engng. Con. of the Inst. of Civ. Engrs.* Results of an investigation. 1200 w. *Ir Age*—Aug. 8, 1907. No. 86116.

See also Piping, under **IRON AND STEEL**; and Ingot Molds, under **MECHANICAL ENGINEERING, MACHINE WORKS AND FOUNDRIES**.

## Slags.

Tests of Titaniferous Slags. Charles N. Cox, Jr., and Loring C. Lennox. Outlines methods used in making a number of tests on titaniferous slag mixtures, ex-

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## Smelters

plaining the materials used in making up the slag. 3500 w. Elec-Chem & Met Ind—Dec., 1906. No. 81688 C.

Iron Slag. Dr. Theodor Koller. On the utilization of this waste product. 2700 w. Sci Am Sup—Sept. 21, 1907. No. 87128.

See also Slag Cement, under CIVIL ENGINEERING, MATERIALS OF CONSTRUCTION.

## Smelters.

A By-Product Charcoal-Iron Plant at Marquette, Mich. Plan and description. 2500 w. Eng Rec—Oct. 12, 1907. No. 87571.

The Plants of the Luxemburg Mining, and Saarbrück Smelting Company (Die Anlagen der Luxemburger Bergwerks- und Saarbrücker Eisenhütten-Aktiengesellschaft). F. Schroeder. The first part of the serial reviews the history of this German company from its formation in 1856. Ills. 3000 w. Serial. 1st part. Oest Zeitschr f Berg u Hüttenwesen—July 27, 1907. No. 86249 D.

## Spain.

A Study of the Iron Ore Deposits of Almeria. Pablo Fabrega. The present article considers mainly the geology of the district. Map. 2000 w. Min Jour—July 6, 1907. Serial. 1st part. No. 85586 A.

## Steel Making.

A Method of Producing High-Class Steel from Pig-Iron Containing Chromium, Nickel and Cobalt. Arthur Windsor Richards. Gives a detailed description of the process. 1500 w. Ir & Coal Trds Rev—May 10, 1907. No. 84614 A.

The Manufacture of Steel from High-Silicon Phosphoric Pig-Iron by the Basic Bessemer Process. Arthur Windsor Richards. Describes the process in use at the Cleveland Works for blowing in the basic converter iron which is high in silicon and low in phosphorus. 1500 w. Ir & Coal Trds Rev—May 10, 1907. No. 84613 A.

The Relation Between the Process of Manufacture and Some of the Physical Properties of Steel. F. W. Harbord. Gives tabulated results from experimental bars and other sources, with report of tests. 2200 w. Ir & Coal Trds Rev—May 10, 1907. No. 84615 A.

The Manufacture of Steel and Wrought Iron in America. Bradley Stoughton. An illustrated review of the various processes and their characteristics, the expense and quality, the uses to which the products are applied, etc. 5000 w. Engineering Magazine—Oct., 1907. No. 87278 B.

## IRON AND STEEL

## Steel Works

Iron and Steel Manufacture in Australia. Describes the Heskett-Moore process—a method for directly converting iron ore into malleable iron or steel by a continuous system. 1500 w. Queens Gov Min Jour—Sept. 15, 1906. No. 80286 B.

Compound Steel—A Modern Steel Plant Proposition. Peter Eyermann. Describes a new process for manufacturing steel, stating its advantages. Ills. 3500 w. Elec-Chem & Met Ind—April, 1907. No. 83539 C.

Structural Steel Making. Prof. Charles M. Spofford. Illustrates and describes the essential processes in rail and structural steel making, giving an outline of the history of the iron industry in the United States. Short discussion. 7000 w. No. 65. Pro Brooklyn Engrs' Club—1906—No. 85971 N.

See also Africa, Assaying, Austria, Blast Furnaces, Blowholes, Colorado, Gas Fuel, India, Laboratory, Metallography, Metallurgy, Mixers, Open Hearth, Piping, Pyrometry, Rails, Rolling Mills, Scrap, Segregation, Slags and Smelters, under IRON AND STEEL.

## Steel Plates.

Manufacture of Steel Plates (La Fabrication des Plaques de Blindage aux Forges nationales de la Chaussade). A. Bizot. Description of processes of manufacture. Illus. 2800 w. Le Génie Civil—Jan. 26, 1907. No. 82326 D.

## Steel Works.

The Lackawanna Steel Company. Noteworthy features of the more recent construction work at South Buffalo, N. Y., are illustrated and described. 5500 w. Ir Age—Jan. 3, 1907. No. 81362.

Imperial Japanese Government Steel Works at Wakamatsu. From a report by H. M. Charge d'Affaires at Tokio to the Board of Trade. Descriptive account. 2500 w. Ir & Coal Trds Rev—March 8, 1907. No. 83125 A.

The Gadsden Plant of the Southern Steel Company. Plan, sections, and description of a new plant in Alabama. 2500 w. Ir Age—April 11, 1907. No. 83558.

The Blast-Furnace, Steel, and Rolling-Mill Plant of the "Società Anonima degli Alti Forni e Fonderia di Piombino" (Die Hochofen-, Stahl-, und Walzwerksanlage der "Società Anonima degli Alti Forni e Fonderia di Piombino"). Fritz Lürmann. Illustrated description. 2100 w. Stahl u Eisen—May 1, 1907. No. 84935 D.

The Metallurgical Works of the Austro-Hungarian Railway Co. at Resicza

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### Steel Works

and Anina, Hungary (Die Hüttenwerke der Priv. Oesterreich-Ungarischen Staats-Eisenbahngesellschaft in Resicza und Anina, Ungarn). F. W. Lürmann. General review of these large coal, iron and steel works, and their products, with plans. 1500 w. *Stahl u Eisen*—Nov. 15, 1906. No. 80679 D.

The Forges and Mines of the Hungarian State. Plan and illustrated description of the Diosgyor steel works, their equipment, management, etc. 6000 w. *Engr, Lond*—Sept. 20, 1907. No. 87347 A.

The Krupp Works. The present number gives an illustrated description of the Essen Works. 1800 w. *Engr, Lond*—Feb. 8, 1907. Serial. 1st part. No. 82472 A.

The Krupp Works in Germany. J. B. Van Brussel. An illustrated description of a group of plants comprising blast furnaces, steel mills, gun and armor plate shops. 4000 w. *Ir Trd Rev*—Oct. 3, 1907. No. 87404.

Gas and Electric Power in Continental Iron and Steel Works. J. B. van Brussel. Reviews some of the most important economies which have been applied in Europe in the manufacture of iron and steel. Ills. 2800 w. *Engineering Magazine*—July, 1907. No. 85305 B.

The Barakar Iron Works of the Bengal Iron and Steel Company. From a paper read before the Min. & Geol. Inst. of India. Describes this plant. 1500 w. *Ir & Coal Trds Rev*—April 5, 1907. No. 83752 A.

Taganrog Iron Works (Das Hüttenwerk der Metallurgischen Gesellschaft zu Taganrog). L. Fortunato. Description of a large establishment in Russia. Diagram. Serial. 7 parts. 17600 w. *Oesterr Zeitschr f Berg und Hüttenwesen*—Jan. 5, 12, 19 and 26, Feb. 2, 9 and 16, 1907. No. 83612 each D.

### MINING

### Accidents

The Works of the Atikokan Iron Company, Limited. Illustrates and describes the new blast furnace, ore roasting kilns, and coking plant at Port Arthur, Ontario. 1500 w. *Ir Age*—May 2, 1907. No. 84029.

The Illinois Steel Company's Joliet Extensions. Illustrated description of the new blast furnace, nut and bolt shop, and rail joint plant. 2500 w. *Ir Age*—Nov. 15, 1906. No. 80385.

The Joliet Plant of the Illinois Steel Co. An illustrated article describing recent improvements and additions, comprising a new 500-ton blast furnace, a nut and bolt mill and a rail joint plant for continuous and Wolhaupter joints. 3000 w. *Ir Trd Rev*—Nov. 15, 1906. No. 80395.

See also New South Wales, Open Hearth, Rolling Mills, and Smelters, under **IRON AND STEEL**; and Steel Works, under **INDUSTRIAL ECONOMY**.

### Sweden.

See **Iron Ore**, under **INDUSTRIAL ECONOMY**.

### Tin Plates.

Rolling of Sheet Steel for Tin Plates. A descriptive account of the rolling of sheet metal. 2000 w. *Prac Engr*—March 15, 1907. No. 83260 A.

See also same title, under **INDUSTRIAL ECONOMY**.

### Trade.

See **Iron Trade**, under **INDUSTRIAL ECONOMY**.

### Virginia.

The Virginia Iron Industry. John J. Porter. A discussion of the past history, present conditions, and future prospects. 5000 w. *Mfrs Rec*—June 27, 1907. Serial. 1st part. No. 85288.

## MINING

### Accidents.

Accidents due to Electricity in Mines. (Unfälle durch Elektrizität in Bergwerken). R. Rinkel. Enumeration and classification of casualties in European mines using electric power. 1200 w. *Elektrotechnische Zeitschrift*—Feb. 28, 1907. No. 82964 B.

The Cave-in of an Inclined Shaft and Subsequent Rescue of an Entombed Miner, at Bakersfield, Cal. F. C. Finkle. Explains the nature of the work in hand and the plans for its construction, the ac-

cident and methods of rescue. Ills. 2000 w. *Eng News*—March 21, 1907. No. 83198.

Mine Water and Mine Fire in the Neu-Diepenbrock III Mine at Selbeck (Grubenwasser und Grubenbrand in dem Erzbergwerk Neu-Diepenbrock III zu Selbeck). D. Hilt. An exhaustive discussion of the causes of the troubles experienced at this German mine. Ills. 5500 w. *Glückauf*—July 20, 1907. No. 86238 D.

See also same title, under **COAL AND COKE**.

# MINING AND METALLURGY

## Accounts

### Accounts.

West Australian Gold Mining Costs. A valuable paper dealing with method of accounting for a group of mines. 2000 w. *Min & Sci Pr*—Dec. 8, 1906. No. 80958.

A Card System of Mine Accounts. R. S. Handy. Detailed description of method used by the writer. 900 w. *Min & Sci Pr*—July 13, 1907. No. 85834.

Costs, Methods, and Records. W. A. MacLeod. Considers how far such records should be carried in the case of small or medium-sized mines. 3000 w. *Queens Gov Min Jour*—May 15, 1907. No. 84872 B.

See also Stores Keeping, under **MINING**: and Accounting, under **INDUSTRIAL ECONOMY**.

### Air Compressors.

A Taylor System Air Compressor at the Victoria Copper Mine, Michigan. A. H. Rose. Illustrated description of a large air compressor built on lines developed from a water trompe of large size and giving economical results. 2500 w. *Mines & Min*—March, 1907. No. 82759 C.

Portable Electric Air Compressors. Frank C. Perkins. Illustrated description of machines used to obtain the advantages of electric transmission and of compressed air operation for mining machinery. 1200 w. *Mines & Min*—May, 1907. No. 84064 C.

A New Development in Air Compressors. Illustrated description of the Nordberg constant speed variable delivery air compressor. 1200 w. *Am Mach*—Vol. 30, No. 34. No. 86503.

### Alaska.

Alaska and Its Possibilities. J. T. Cornforth. Brief account of placer gold districts, other minerals found, and matters relating to the development of the country. 1500 w. *Am Min Cong*—1906. No. 87375 N.

### Analysis.

Technical Methods of Analysis. W. A. Seamon. Abstracted from *W. Chem. & Met.* A criticism of modern methods, with suggestions. 2500 w. *Min & Sci Pr*—Aug. 24, 1907. No. 86657.

### Ancient Britain.

The Mines and Agriculture of Roman Britain. Alexander Del Mar. An account of the ancient system of mining, agriculture, and highway construction. 1500 w. *Min & Sci Pr*—July 6, 1907. No. 85525.

### Australia.

Mining in Australia. W. J. Loring.

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Deals with the states in order, giving a description of present mining conditions. 2000 w. *Min & Sci Pr*—Oct. 19, 1907. No. 87890.

Geology and Geological Survey of Western Australia. Ralph Stokes. Outlines the work of the geological survey. 2500 w. *Min Wld*—Dec. 22, 1906. No. 81226.

### Blasting.

Detonating Caps in Blasting. Roland L. Oliver. Notes on the values of different caps in developing the energy of explosives. 5000 w. *Cal Jour of Tech*—Dec., 1906. No. 81203.

See also Excavation, under **CIVIL ENGINEERING, CONSTRUCTION**.

### Boreholes.

The Deflection of Boreholes in Diamond Drilling on the Rand. A. Zboril. Discusses the cause of the deflection and means of reducing it. Ills. 3000 w. *Jour S African Assn of Engrs*—March, 1907. No. 83984 F.

The Deviation of Rand Bore-holes from the Vertical. Joseph Kitchin. Gives the results of the surveys of 22 bore-holes, with facts related to the subject. 6000 w. *Inst of Min & Met, Bul* 34—July 18, 1907. No. 86495 N.

The Causes of the Deflection of Deep Boreholes from the Perpendicular (Die Ursachen der Abweichung der Tiefbohrungen vom Lot). Albert Fauck. Illustrated discussion with numerous examples. 1500 w. *Oest Zeitschr f Berg u Hüttenwesen*—May 11, 1907. No. 84944 D.

Camera for Photographing Walls of Bore-Holes. J. T. Atwood. Illustrated description of a camera and the method of operation, for obtaining views of a continuous strip of the formations pierced by the drill, showing the character and distribution of the ore. 1500 w. *Eng & Min Jour*—May 18, 1907. No. 84420.

An Underground Camera. J. T. Atwood. Illustrates and describes a camera designed for photographing the sides of bore holes. 2200 w. *Wis Engr*—June, 1907. No. 85129 D.

The Determination by Measurement of the Depth and Direction of Deep Bore Holes (Die Feststellung des Fallens und Streichens von Tiefbohrlöchern durch Messung). Herr Erlinghagen. Discusses the various cases in mining work in which such knowledge is necessary and describes the more important instruments and methods for bore-hole surveying. Ills. Serial. 2 parts. 14000 w. *Glückauf*—June 8, 1907. No. 85630 each D.

Recent Stratameters and Bore Hole

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## Boring

Surveying Instruments (Neuere Strata-meter und Bohrlochniegunsmesser). Dr. Freise. Illustrated description of several instruments recently perfected in Germany. Serial. 2 parts. 3500 w. Oesterr Zeitschr f Berg u Hüttenwesen—June 15 and 22, 1907. No. 85637 each D.

## Boring.

Deep Boring at Barlow, Near Selby. H. St. John Durnford. Read before the Inst. of Min. Engrs. Some notes on a deep boring recently put down. Short discussion. 2500 w. Col Guard—Sept. 6, 1907. No. 87075 A.

The Theory of the Movement of the Flushing Stream in Bore Holes (Die Theorie der Bewegung des Spülstromes in Bohrlöchern). Richard Sorge. A theoretical and mathematical discussion. Ills. 7000 w. Glückauf—Sept. 28, 1907. No. 87626 D.

Jet Boring for Petroleum (Das Spülbohren nach Erdöl). Richard Sorge. The advantages of boring deep holes or wells with the aid of a stream of water. Diagrams. 3500 w. Glückauf—Oct. 27, 1906. No. 81108 D.

The Valve Mechanisms of Hydraulic Boring Devices (Die Steuerungen der Hydraulischen Tiefbohrrichtungen). Frd. Freise. The first part of the serial deals with devices with spindle valves. Ills. 1600 w. Serial. 1st part. Oest Zeitschr f Berg u Hüttenwesen—July 20, 1907. No. 86248 D.

A New Boring Chisel (Ein Neuer Erweiterungsmesser). Anton Pois. The first part of the serial discusses the problem of chisel boring generally, and illustrates several types of bits. 1700 w. Serial. 1st part. Oest Zeitschr f Berg u Hüttenwesen—Aug. 31, 1907. No. 86947 D.

See also Shaft Sinking, under MINING; and Bore Holes and Boring, under CIVIL ENGINEERING, WATERWAYS AND HARBORS.

## Brazil.

The Mineral Industry of Brazil. Arrajado R. Lisboa. Information concerning the deposits and mining of gold, diamonds, manganese, iron, coal, copper, and monazitic sands. 2000 w. Eng & Min Jour—March 2, 1907. No. 82687.

## British Columbia.

Metalliferous Mining on West Coast of Vancouver Island. Notes, with illustrations, of various mining properties on the island. 7500 w. B C Min Rec—July, 1907. No. 86815 B.

British Columbia in 1906. Arthur

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## Canada

Wheeler, Jr. A review of the tonnage and value of the ores mined during the year, dealing with districts. 4000 w. Can Min Rev—Feb., 1907. Serial. 1st part. No. 82439 B.

On Surveys in New Westminster District and Texada Island. O. E. LeRoy. A summary report of the geological survey, the deposits, etc. Ills. 1800 w. B C Min Rec—Feb., 1907. No. 83784 B.

Reconnaissance Up West Fork of Kettle River. Horace Evans. The present article describes the country. 1500 w. Min Wld—July 13, 1907. Serial. 1st part. No. 85553.

## Cable Ways.

An Aerial Tramway, Seven Miles in Length (Transporteur Aérien de 35 Kilomètres). Illustrated description of the construction and operation of a long aerial tramway for the transport of ore between Chilecito and Upulungos, Argentine Republic. Ill. 3000 w. Génie Civil—March 23, 1907. No. 83693 D.

The Cable Ways for Culm of the Courl and Scharnhorst Mines of the Harpener Mining Company (Die Drahtseilbahnen für Versatzmaterial der Zechen Courl und Scharnhorst der Harpener Bergbau-Aktien-Gesellschaft). F. Schulte. Describes a system for transporting culm from these two mines to a central dump. Plan. 2300 w. Glückauf—July 13, 1907. No. 86236 D.

## Cage Guides.

The Arrangement of Cage Guides for Modern Collieries. J. S. Barnes. Drawings with description of working details of both rope and steel rail guides for winding coal at high speeds and heavy loads. 2500 w. Ir & Coal Trds Rev—Oct. 4, 1907. No. 87707 A.

## Cages.

Handling Skips and Man Cages. H. T. Mercer. Describes the method of changing one for the other on the hoisting rope of the Trimountain Mine, Painesdale, Mich. 1000 w. Mines & Min—Dec., 1906. No. 80757 C.

## California.

The Mineral Industry of California During 1906. Lewis E. Aubury. Reviews the development in gold mining, copper, quicksilver, borax, soda, and other minerals. 2700 w. Min & Sci Pr—Jan. 5, 1907. No. 81607.

## Canada.

Canadian Mining Intelligence. H. Mortimer Lamb. Discusses briefly the mineral production of British Columbia, the gold output of Nova Scotia, the Canadian

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## Canada

## MINING

## Concentration

mint, and gold dredging on the Saskatchewan. 2500 w. *Mines & Min*—Oct., 1907. No. 87458 C.

On the Advisability of the Establishment of a Federal Department of Mines. H. Mortimer Lamb. Reviews the history of the geological survey of Canada in its relation to the mining industry, and outlines work to be accomplished. 7500 w. *Jour Can Min Inst*—1906. No. 83807 N.

A Canadian Department of Mines or Geological Survey. J. B. Tyrrell. Considers the duties and uses of such a department. General discussion. 2200 w. *Jour Can Min Inst*—1906. No. 83808 N.

On the Need of a Topographical Survey of the Dominion of Canada, Particularly with Reference to the Development of the Economic Resources of the Dominion. Frank D. Adams. Shows the need of such a map for the proper development of the country, and outlines the features and advantages of such maps. 5000 w. *Jour Can Min Inst*—1906. No. 83806 N.

## Caving System.

The Dome of Equilibrium and the Caving System of Mining. Claude T. Rice. Considers methods of support used in underground mining, the caving system, and gives the writer's ideas concerning the dome of equilibrium. 1500 w. *Min & Sci Pr*—July 20, 1907. No. 85962.

## China.

Primitive Methods of Chinese Mining. Illustrates and describes methods practiced in the Northern Territory of South Australia, where most operations are carried on by Chinese without European supervision. 2300 w. *Min Jour*—Dec. 29, 1906. No. 81532 A.

## Colorado.

The Idaho Springs Mining District of Colorado. J. E. Spurr and George H. Garrey. An authoritative report of this district and the values in gold, silver, lead, zinc and copper. 1000 w. *Min Rept*—Jan. 17, 1907. No. 81711.

A Trip to San Juan, Colorado. Prof. Arthur Lakes. Describes this region and some of the remarkable geological formations. 2000 w. *Mines & Min*—March, 1907. No. 82761 C.

## Compressed Air.

Compressed Air in Mining. J. H. Hart. Remarks on the efficiency and economy of falling-water compressors, explaining their operation. 900 w. *Eng & Min Jour*—May 4, 1907. No. 84218.

Use of Compressed Air in Mining. Jos. H. Hart. Explains the value of hydraulic

compression for mining uses. 1700 w. *Min Wld*—Sept. 14, 1907. No. 87041.

See also Air Compressors, under MINING, and also under MECHANICAL ENGINEERING, POWER AND TRANSMISSION.

## Concentration.

Velocity of Galena and Quartz Falling in Water. Robert H. Richards. Supplementary to former papers by the author on Close Sizing Before Jigging, and Sorting Before Sizing. 4800 w. *Bul Am Inst of Min Engrs*—May, 1907. No. 85271 C.

Concentration. Fritz Cirkel. Address before the Min. Soc. of McGill Univ. on the problems of extraction, concentration and ore treatment. 4500 w. *Can Min Rev*—Feb., 1907. No. 82438 B.

Ore Concentration by Oil. Diagram and description of the process invented by F. E. Elmore, with illustrations. 1600 w. *Engr, Lond*—May 10, 1907. No. 84448 A.

Vacuum-Flotation Process for Concentration. Alexander Stanley Elmore. Describes the method of operation of the Elmore process which employs reduced pressure to increase by expansion the lifting power of gas bubbles in a liquid medium. 1200 w. *Eng & Min Jour*—May 11, 1907. No. 84316.

Novel Equipment of Tywarnhaile Copper Mine. Edward Walker. Illustrates and describes the application of the Elmore vacuum process for concentrating Copper Ore. Ills. 1800 w. *Eng & Min Jour*—June 1, 1907. No. 84706.

Wet Crushing and Concentration in Western Australia. Ralph Stokes. An illustrated description of the processes in use on the Kalgoorlie gold field. 2500 w. *Min Wld*—Jan. 12, 1907. No. 81610.

The Hercules Mill. Scott Turner. Describes this most recent concentrating plant of the Cour d'Alene region, as typifying the most approved lead-silver milling methods in northern Idaho. 3000 w. *Min & Sci Pr*—May 4, 1907. No. 84306.

The Sherman Concentrating Table. C. Everard Arnold. Sketch, plan and description. 600 w. *Min & Sci Pr*—May 11, 1907. No. 84369.

The Wilfley Table. Robert H. Richards. Presents a series of tests made with the Wilfley table, to study concentration of galena in presence of quartz. 6000 w. *Bul Am Inst of Min Engrs*—July, 1907. No. 85928 C.

The Wall Concentrating Mill. Claude T. Rice. Illustrated description of works at Bingham, Utah, and the devices for

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### Concentration

dressings copper ore which are inventions of Col. E. A. Wall. 2000 w. *Eng & Min Jour*—Dec. 1, 1906. No. 80793.

Developments in Ore-Dressing (Fort-schritte in der Erzaufbereitung). Ulrich Horel. Illustrated description of several of the latest ore-dressing tables. 2500 w. *Oest Zeitschr f Berg und Huttenwesen*—April 20, 1907. No. 84135 D.

Milling Practice at the Granadina Mill. S. F. Shaw. Describes the method of treatment of the complex ore from this Mexican mine. Ills. 1200 w. *Eng & Min Jour*—Oct. 5, 1907. No. 87465.

Tails and Sludge Milling at the Old Judge Mine, Oronogo, Mo. W. D. Glenn. Describes a new method of treatment, equipment, and pulp flow. 1000 w. *Mines & Min*—Nov., 1907. No. 87845 C.

Mill Building Progress in the Joplin District. Claude L. Watson. Illustrated detailed description of the Oakwood mill, Webb City, Mo. 1500 w. *Mines & Min*—Nov., 1907. No. 87844 C.

Concentration Upside Down. Walter Renton Ingalls. Illustrated description of the process of A. P. S. Macquisten which causes sulphide minerals to float while quartz and other gangue minerals sink. 4400 w. *Eng & Min Jour*—Oct. 26, 1907. No. 87892.

Concentration of Mixed Sulphides at Broken Hill (L'Enrichissement des Minerais Sulpurés Mixtes de Broken Hill). E. Lemiere. Description of the ores, the concentrating problem and the methods used to obtain a concentrate of the argenteriferous galena. Ill. 5400 w. *Génie Civil*—Mar. 9, 1907. No. 82976 D.

The Flotation Processes at Broken Hill. Donald Clark. Brief notes on the Potter process, the Delprat, the De Bavay, and the granulation process. 9000 w. *Eng & Min Jour*—Nov. 24, 1906. No. 80585.

Zinc and Lead Sulphide of Broken Hill, Australia. W. Burrell. Describes the Potter and other flotation processes of separation. 1500 w. *Mines & Min*—Nov., 1906. No. 80191 C.

The Flotation Processes. W. R. Ingalls. Gives details of the new method of ore separation at Broken Hill. 1800 w. *Eng & Min Jour*—Dec. 15, 1906. No. 80987.

Acid Flotation Processes at Broken Hill. F. H. Jackson. Describes the practice in the Block 14 Mill, at Broken Hill, using the Potter process. 2000 w. *Min & Sci Pr*—June 8, 1907. No. 84866.

See also *Conveyors*, *Grinding Machinery*, *Joplin District*, *Launders*, *Magnetic Separation*, *Missouri*, *Ore Feeders* and *Tailings Disposal*, under *MINING*; *Lake*

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*Superior*, under *COPPER*; *Australia*, *Black Sands*, *Cyaniding* and *Milling*, under *GOLD AND SILVER*; *Magnetic Concentration*, under *IRON AND STEEL*; and *Lead*, *Tin*, *Zinc* and *Zinc Milling*, under *MISCELLANY*.

### Conveyors

Belt Elevators for Ore and Water. Edward S. Wiard. Gives the writer's experience with these machines in wet concentrating mills, with advice as to methods of overcoming troubles. Ills. 4500 w. *Eng & Min Jour*—March 23, 1907. No. 83225.

### Cornwall

The Quantity of Tin, Copper, and Other Minerals Produced in Cornwall. Statistics concerning the output as determined by published records. 700 w. *Ir & Coal Trds Rev*—Aug. 30, 1907. No. 86878 A.

### Costs

When is Ore Payable. E. M. Weston. Discusses facts and principles in relation to mining as a business. A study of mining costs. 1800 w. *Aust Min Stand*—Oct. 31, 1906. Serial. 1st part. No. 81200 B.

### Damages

Recent Litigation Involving Questions of Alleged Damage from Tailings, Tailings Waters, and Smelter Fumes. Prof. F. W. Traphagen. Reviews cases before the courts of Montana and the investigations made by experts. 1500 w. *Am Min Cong*—1906. No. 87374 N.

Recent Litigation Involving Questions of Damages from Smelter Fumes, Tailings Water, and Tailings Debris. F. W. Traphagen. Read at Denver meeting of the Am. Min. Cong. Considers two suits before the United States Court in the state of Montana. 1700 w. *Min Rept*—Nov. 1, 1906. No. 80245.

Dredging and Horticulture. D'Arcy Weatherbe. Gives results of investigations made of facts relating to rendering the land unfit for agriculture by dredging debris. 1000 w. *Min & Sci Pr*—Feb. 2, 1907. No. 82206.

Hydraulic Mining and the Federal Government in California. William W. Harts. An illustrated account of the work of the Débris Commission on the Yuba and other rivers. 1500 w. *Mines & Min*—June, 1907. No. 84738 C.

See also *Smelter Smoke*, under *MINING*.

### Diamond Drilling

Diamond Drills. James Humes. Explains their utility for underground exploration. 1000 w. *Eng & Min Jour*—Feb. 23, 1907. No. 82570.

Prospecting Drills. Wallace Dickson. Description and information in regard



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## Drainage

to drills used with description of an ordinary day's work for a runner or helper. 3000 w. Jour Can Min Inst—1906. No. 83823 N.

The Diamond Core-Drill in Prospecting. Lewis T. Wright. Presents some of the advantages and disadvantages. 2000 w. Min & Sci Pr—Oct. 12, 1907. No. 87751.

## Drainage.

Mine Drainage Districts. D. W. Brunton. Read before the Am. Min. Cong. Discusses the advantages of a common drainage system wherever possible. 1200 w. Min Rept—Nov. 15, 1906. No. 80457.

Mine Drainage Districts. D. W. Brunton. Introductory to a discussion of the question of creating mine drainage districts, followed by discussion. 7000 w. Am Min Cong—1906. No. 87367 N.

Draining the Panther Creek Basin. H. H. Stock. Illustrated description of tunnel 13 miles long for draining the mines of the Lehigh Coal and Navigation Co. 2200 w. Mines & Min—Nov., 1907. No. 87846 C.

The Cripple Creek Drainage Tunnel and Its Significance in Scientific Mining. Victor C. Alderson. Abstract of an address delivered at the inauguration of the driving of the deep drain tunnel. 3300 w. Min Rept—May 16, 1907. No. 84410.

Cripple Creek Drainage Tunnel Started. An account of the inauguration ceremonies. 1500 w. Mines & Min—July, 1907. No. 85419 C.

## Drilling.

A Miner's Drills and His Work with Them. Matt. W. Alderson. Points on the depth of holes drilled, their loading, etc. 900 w. Min & Sci Pr—March 2, 1907. No. 82853.

The Drilling of an Oil Well. A brief outline of the manner of obtaining this liquid wealth in California. 1800 w. Cal Jour of Tech—Nov., 1906. No. 80413.

See also Diamond Drilling and Prospecting, under MINING.

## Drills.

History and Present Status of Air Hammer Drill. H. L. Sinclair. An account of the development of this tool for mining purposes, and a statement of its advantages. 3800 w. Ores & Metals—March 5, 1907. No. 82845.

Hammer Rock Drills, Particularly those made by Flottmann & Co. (Ueber Hammer-Gesteinbohrmaschinen, insbesondere diejenige von H. Flottmann & Co.) Herr Herbst. Description of Flottmann pneumatic drills. Illus. 2400 w. Glück-auf—Feb. 9, 1907. No. 83625 D.

The Gordon Drill on the Rand. Infor-

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mation from recent Consular Reports in regard to the operation and trials of this drill. 2000 w. Compressed Air—Aug., 1907. No. 86404.

See also Stopping, under MINING; and Drills, under CIVIL ENGINEERING, CONSTRUCTION.

## Economica.

Economics of Mining. F. Danvers Power. Considers some of the principles essential to successful mining. 2200 w. Aust Min Stand—Oct. 24, 1906. Serial. 1st part. No. 80805 B.

Economy in Mining Operations. Thomas E. Lambert. Suggestions for the operating of mining properties. Ills. 2500 w. Min & Sci Pr—Sept. 14, 1907. No. 87122.

## Electrical Machinery.

Fire and Explosion-Proof Electrical Mining Machinery. Briefly considers switchgear, motors, motor controlling resistances, transformer and switch oil, etc. 2500 w. Elec Rev, Lond—Sept. 20, 1907. No. 87335 A.

## Electric Hoisting.

The Electric Hoist and Its Applications. An illustrated article calling attention to the most recent development of the electric hoist and its applications. 2500 w. Ir Trd Rev—July 18, 1907. No. 85727.

Electricity Applied to Hoisting (L'Électricité Appliquée à l'Extraction). L. Creplet. A discussion of the general problems of electric hoisting and the applications of various types of motor, giving the advantages of the use of electric power. Ills. 8000 w. All Indus—Aug., 1907. No. 86923 D.

Electric Winding Plant at a German Colliery. Alfred Gradenwitz. Illustrates and describes the Ilgner system with starting motor and fly-wheel equalizer, as employed at Neindorf. 2500 w. Eng & Min Jour—April 13, 1907. No. 83716.

Electrical Winding Plants. Alfred Gradenwitz. An illustrated article giving details of arrangements, with descriptions of several German plants. 2200 w. Eng & Min Jour—Feb. 2, 1907. No. 82097.

Electric Windlass (Elektrisch betriebene Spille). Erich Herrmann. Description of motor driven windlasses as used in Europe. Illus. 1700 w. Elektrotech Zeitschr—Jan. 17, 1907. No. 82333 B.

The New Electric Hoisting Plant on the Ilgner System at the Salomon Mine at Ostrau, Moravia (Die Neue Elektrische Förderanlage Patent Ilgner am Salomon-Schachte in Mähr.-Ostrau). J. Havlicek. The first part of the serial discusses the design of Ilgner hoists and illustrates the arrangement of the machines at Ostrau.

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## Electric Hoisting

1600 w. Serial. 1st part. Oest Zeitschr f Berg u Hüttenwesen—Aug. 3, 1907. No. 86943 D.

The Electric Hoist at the Hermann Mine at Eisleben (Die Elektrische Fördermaschine auf "Hermannschacht" bei Eisleben). L. Hoffmann. Illustrates and describes an installation on the Ilgner system. 1800 w. Glückauf—Sept. 7, 1907. No. 87625 D.

Some New Flywheel Storage Systems. A. P. Wood. Read before the Manchester Sec. of the Inst. of Elec. Engrs. Describes some recent patents in connection with electric winding plants, discussing the three-phase system, the cascade flywheel storage system, and others. Ills. 3800 w. Elec Engr, Lond—Sept. 20, 1907. No. 87334 A.

Some New Flywheel Storage Systems. A. P. Wood. Read before the Manchester Sec. of the Inst. of Elec. Engrs. Describes some three-phase and some continuous current systems, giving diagrams. 4000 w. Ir & Coal Trds Rev—Feb. 22, 1907. No. 82843 A.

Effects of Acceleration on Winding Torques. George Ness. An account of a test of the Tarbrax electric winding plant showing a variation from 15 to 45 kw. in power taken and 48¾ per cent. efficiency. 1800 w. Eng & Min Jour—March 30, 1907. No. 83356.

## Electric Power.

To Mining Electricians. H. J. Wright. Practical hints dealing with the everyday work of mine electricians. Ills. 1600 w. Aust Min Stand—Oct. 31, 1906. Serial. 1st part. No. 81201 B.

Electricity in Mines (La Electricidad en las Minas). Emilio Guarini. Discusses the general consideration attending its installation and its application to lighting, communication, traction and motive power problems. 10000 w. Anal Sociedad Cien Argen—Dec., 1906. No. 84933 F.

A Novel German Mining Electric Accumulator Plant. Frank C. Perkins. Brief description, with illustration, of the storage battery plant at the mining plant of the Gewerkschaft "Carlsfund" at Gross-Rhuden near Seesen, Germany. 600 w. Min Rept—Sept. 26, 1907. No. 87292.

The Electric Power Installation at Grangesberg Iron Mines, Sweden. G. Ralph. Read before the Newcastle Sec. of the Inst. of Elec. Engrs. Illustrated description of the electric mining plant installed. 3000 w. Elec Engr, Lond—Feb. 15, 1907. No. 82599 A.

The Electric Power Installation at

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Grangesberg Iron Mines, Sweden. G. Ralph. Abstract of a paper read before the Newcastle Loc. Sec. of Inst. of Elec. Engrs. A descriptive article, with illustrations. 2500 w. Ir & Coal Trds Rev—May 3, 1907. No. 84348 A.

Electric Power at the Calumet and Hecla. Carl L. C. Fichtel. An account of the adoption of high-tension alternating current to supplant steam throughout the mine and mill. 1500 w. Eng & Min Jour—July 27, 1907. No. 85953.

The Electrical Equipment of the Yak Tunnel. Robert E. Renz. Illustrates and describes the plant which supplies current for the operation of the tunnel, for mining in adjoining properties, and for lighting and power. 2000 w. Eng & Min Jour—May 25, 1907. No. 84570.

Under What Circumstances Is Contact with an Electrical Circuit Dangerous (Unter Welchen Umständen ist die Berührung einer Elektrischen Anlage Gefährlich?) Hermann Zipp. Discusses the various sources of danger in electrical plants, particularly with reference to the use of electricity in mines. 4000 w. Serial. 2 parts. Elektrotechniker—June 10 and 25, 1907. No. 85648 each D.

See also Accidents and Pumping, under MINING; Electric Power, under COAL AND COKE; and Mining Plant, under ELECTRICAL ENGINEERING, DISTRIBUTION.

## Examination.

Examination of Mines. R. Gilman Brown. Read before the Am. Min. Cong. Compares the methods of the present with those of twenty-five years ago, discussing the fundamental points which lessen the hazards of purchase. 3500 w. Can Min Rev—Jan., 1907. No. 81762 B.

The Examination of Mining Properties (Die Begutachtung von Bergwerksunternehmungen). Otto Pütz. Discusses the various factors which should enter into a decision of the value of a mining property. 2300 w. Glückauf—April 27, 1907. No. 84154 D.

Suggestions for Field Observations of Ore Deposits. S. F. Emmons. Suggestions bearing on mechanical phenomena, chemical and mineralogical phenomena, economic and commercial conditions. 3500 w. Min & Sci Pr—July 6, 1907. No. 85521.

## Excavator.

A Stripping Excavator with a Conveyor to Form the Waste Bank. Illustrated description of an interesting combination of excavating and conveying plant designed to meet special conditions in the

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## Explosives

stripping of coal lands. 1200 w. Eng News—Sept. 12, 1907. No. 87001.

## Explosives.

How the Miner's Dynamite is Made. Whitman Symmes. An explanation of the nitro-glycerine processes and the products used in its manufacture. 4000 w. Min & Sci Pr—March 9, 1907. Serial. 1st part. No. 83055.

Development in the Explosives Art in the United States During the Last Five Years. Charles E. Munroe. A review of changes in the explosive business and details of methods in use. 2500 w. Sci Am Sup—Dec. 29, 1906. No. 81296.

Modern Explosives (Les Explosifs Modernes). H. Schmerber. A review of the preparation, manufacture, and use of modern high-power explosives, in view of recent explosions on shipboard, the first part of the serial outlining the general principles of the theory of explosives. Ills. 3000 w. Serial. 1st part. Génie Civil—Aug. 31, 1907. No. 86929 D.

Explosions in the Roburite Works at Witten (Die Explosionen in der Roburit-fabrik bei Witten). Dr. Klocke. Diagrams. 2800 w. Glückauf—March 23, 1907. No. 83664 D.

See also same title, under COAL AND COKE.

## Finance.

Mining Stocks and Mining Engineers. Francis C. Nicholas. Gives reasons why mining engineers should have more intimate relations with bankers and brokers who have mining stock for sale. 2000 w. Min Wld—Sept. 7, 1907. No. 86781.

Requirements of Modern Mining. J. R. Finlay. Discusses some of the requirements involved in a successful mining business, and the questions to be met in the near future. 2000 w. Min & Sci Pr—April 20, 1907. No. 83964.

## Foreign Countries.

Review of Mining in Foreign Countries in 1906. Reports from the Transvaal, Rhodesia, Mexico, Ontario, and Eastern States of Australia. 12500 w. Eng & Min Jour—Jan. 5, 1907. No. 81477.

## Grinding Machines.

Machines for Grinding Chalk, Cements, Phosphates and Similar Materials (Appareils de Broyage pour Chaux, Ciments, Phosphates et Matières Analogues). P. Chignaterie. Illustrated description of various types with plate showing sections of mills. 3000 w. Génie Civil—April 20, 1907. No. 84116 D.

Conclusive Test of Lane Mill. J. A.

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## Haulage

Stewart. Gives information acquired from a test made in the State of Washington. 1000 w. Min Rept—June 13, 1907. No. 85083.

The Computation of the Crushing Efficiency of Tube Mills. S. H. Pearce and W. A. Caldecott. Describes the method used. 1500 w. Jour Chem, Met & Min Soc of S Africa—Sept., 1906. No. 80471 E.

The Humphreys' Quartz Mill. C. E. Humphreys. Brief illustrated description of a mill embodying the pounding principle of the stamp-mill and the grinding-amalgamating principles of the arrastre. 900 w. Min Rept—Sept. 26, 1907. No. 87293.

## Haulage.

Mules vs. Electric Locomotives. W. F. Murray. Presents the comparative merits and costs of the mine mule and the electric locomotive. 1000 w. Eng & Min Jour—Nov. 24, 1906. No. 80588.

Yak and Newhouse Tunnels. An illustrated article describing the use of Goodman locomotives for underground haulage in these tunnels. 3000 w. Ores & Metals—Jan. 20, 1907. No. 82091.

Rack-rail Haulage in Coal Mines. George E. Lynch. An illustrated article showing how the rack-rail and cog-wheel are used to supplement ordinary traction where steep grades occur in mines. 3000 w. Eng & Min Jour—Aug. 3, 1907. No. 86105.

Construction of Tracks in Coal Mines. M. S. Hachita. Urges that more attention be given to building haulage roads, the laying out of frogs, switches, etc. 3500 w. Eng & Min Jour—Oct. 5, 1907. No. 87466.

Self-Acting Endless-Rope Haulage at the Glückhilt Mine at Hettstedt (Bremsbergförderung mit Seil ohne Ende auf "Glückhilfschächte" bei Hettstedt). L. Hoffmann. Illustrates and describes the haulage installation, signals, etc. 1600 w. Glückauf—Sept. 7, 1907. No. 87622 D.

An Appliance for Automatically Stopping and Restarting Mine Wagons. W. Galloway. Illustrated description of an appliance for arresting the motion of a full or empty wagon without shock, holding it as long as necessary, and pushing it forward with any desired velocity. 1500 w. Min Jour—Dec. 22, 1906. No. 81338 A.

Handling Cars with Rolling Device for Dumping. Erskine Ramsay. Illustrates and describes a car-handling and dumping device used at many American mines, stating its advantages. 1500 w. Eng & Min Jour—May 11, 1907. No. 84317.

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### Hoisting

See also Mules and Safety Appliances, under MINING; and Haulage, under COAL AND COKE.

#### Hoisting.

Shaft Equipment. H. L. Templer. Abstract of a paper read before the Mech. Engrs' Assn. of S. Africa. Considers some of the disadvantages of the usual systems, using wheeled skips, and submits an improved system. 1500 w. Col Guard—Jan. 4, 1907. No. 81646 A.

Hoisting in Small Zinc Mines in Wisconsin. George S. Brooks. Discusses the merits of cage-car and tub systems, giving a comparison of costs. 1500 w. Eng & Min Jour—Feb. 23, 1907. No. 82569.

A Cripple Creek Ore-handling Plant. S. A. Worcester. Illustrates and describes a single, counterbalanced skip hoist, discharging into self-dumping cars, claiming that it adds 33 per cent. to the capacity of a shaft. 1300 w. Eng & Min Jour—Aug. 24, 1907. No. 86552.

Temporary Whim for Hoisting. Guy C. Stoltz. Brief illustrated description of a whim built for temporary hoisting at Mineville, N. Y. 500 w. Eng & Min Jour—June 15, 1907. No. 85047.

A Few Notes on Results of Tests of Worn Ropes. W. Martin Epton. Read before the Trans. Inst. of Mech. Engrs. Gives results of ninety complete tests of worn wire ropes. Also short discussion. 2000 w. Min Jour—Aug. 31, 1907. No. 86867 A.

Transvaal Commission Report on the Use of Winding Ropes and Safety Appliances in Pit Shafts. Abstract. 11000 w. Ir & Coal Trds Rev—Oct. 11, 1907. No. 87842 A.

Report of the Transvaal Commission on the Use of Winding Ropes, Safety Catches and Appliances in Mine Shafts. An important statement in regard to safe practice in deep mine hoisting. The full report will be given. 6000 w. Eng News—Oct. 31, 1907. Serial. 1st part. No. 87988.

The Use of Winding Ropes, Safety Catches, and Appliances in Mine Shafts. Abstract of the report of commission appointed by the Governor of the Transvaal to investigate this subject. 4800 w. Col Guard—Sept. 27, 1907. Serial. 1st part. No. 87519 A.

Safety in Winding. George H. Winstanley. Read before the Nat. Assn. of Col. Mgrs. Classifies and discusses all the accidents possible. Also discussion. 9000 w. Ir & Coal Trds Rev—March 15, 1907. No. 83273 A.

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### Joplin District

See also Electric Power and Safety Appliances, under MINING.

#### Hoisting Engines.

A Comparison of Steam and Electric Winding Engines. Gives the conclusions from a paper by Prof. A. Wallichs, in the *Zeit. des Ver. Deut. Ing.* Ills. 1700 w. Engr, Lond—April 5, 1907. No. 83748 A.

Recent Improvements in the Construction of Steam Hoisting Engines (*Neuere Erfolge im Bau von Dampffördermaschinen*). Ad. Wallichs. Mine hoisting engines described. Illus. Serial. Parts 1 and 2. 2000 w. Oesterr Zeitschr f Berg und Hüttenwesen—March 23 and 30, 1907. No. 83659 each D.

Criticism of Safety Appliances for Steam Hoisting Engines (*Zur Kritik neuerer Sicherheitsapparate an Dampffördermaschinen*). Herr Hoffmann. Description of safety stops applied to mine hoists, etc. Illus. 5600 w. Glückauf—Feb. 16, 1907. No. 83626 D.

See also Hoists, under MECHANICAL ENGINEERING, POWER AND TRANSMISSION.

#### Joplin District.

Origin of Lead and Zinc Ore Bodies in Joplin, Missouri, District. Otto Ruhl. Points out the structural features that determine the method of ore deposition in this field. Maps. 3500 w. Min Rept—June 20, 1907. No. 85228.

Ground Breaking in the Joplin District. Doss Brittain. Illustrated article describing method. Holes are drilled with air drills and squibbed before charging. 2500 w. Eng & Min Jour—Aug. 10, 1907. No. 86334.

The Joplin Zinc District. R. L. Herrick. An illustrated general description of the mining and milling methods in use in the region. Plate. 12000 w. Mines & Min—Nov., 1907. No. 87843 C.

The Yellow Dog Mine and Mill. R. L. Herrick. Illustrated general description of methods of mining sheet ground, hoisting by endless conveyor, and methods of milling at Webb City, Mo. 2000 w. Mines & Min—Nov., 1907. No. 87847 C.

Handling "Sheet-Ground" in the Joplin District. J. H. Polhemus. Illustrates and describes methods of mining and milling as practiced by the American Zinc, Lead, and Smelting Co. 2000 w. Mines & Min—Nov., 1907. No. 87848 C.

Mining in the Joplin District. Ch. Guengerich. Brief account of conditions in this region which furnishes 50 per cent of the zinc ore smelted in the United States. 1800 w. Am Min Cong—1906. No. 87369 N.

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## Keps

### Keps.

Keps. James Tonge. Illustrated description of various forms of modern keps for supporting cages during loading and unloading. 3000 w. *Mines & Min*—Dec., 1906. No. 80755 C.

Keps. James Tonge. A description and criticism of the best known keps, for supporting cages in winding shafts, used in Great Britain and on the Continent. Ills. 4000 w. *Ir & Coal Trds Rev*—April 5, 1907. No. 83751 A.

### Labor.

Notes on Mexican Mine Labor. Carl A. Allen. An explanation of the systems of employing the Mexican, showing that he can be worked in most cases to better advantage as a day's pay man, and giving a comparison of the Mexican and American miner. 2200 w. *Min & Sci Pr*—March 16, 1907. No. 83196.

Mining Labor in Australia. W. J. Loring. Considers the Australian workman superior to any known by the writer in other parts of the world, and gives an account of his characteristics and conditions. 1600 w. *Min & Sci Pr*—April 20, 1907. No. 83965.

### Launders.

Flow of Water Carrying Sand in Suspension. F. K. Blue. An experimental study of factors which influence the relation between the velocity required and the proportion of sand in suspension. 2500 w. *Eng & Min Jour*—Sept. 21, 1907. No. 87162.

### Law.

Do the Geological Relations of Ore Deposits Justify the Retention of the Law of the Apex. Letters from Courtenay DeKalb, and William F. Robertson, discussing this law. 3300 w. *Ec Geol*—Sept., 1906. No. 80861 D.

The Right to Minerals on Railroad Lands. Courtenay DeKalb. Brief discussion of the agitation in Nevada to secure legislation permitting the valid location of mining claims on railroad grant lands. 1000 w. *Min & Sci Pr*—Dec. 22, 1906. No. 81288.

The Reform of the United States Mineral Land Law. R. W. Raymond. Discusses the mineral-land laws, the attempts at reform, and the remedy for present abuses. 1500 w. *Eng & Min Jour*—June 8, 1907. No. 84839.

Weak Points in the Federal Law in Relation to Mineral Lands. George W. Ritter. Discusses the law of the apex and extralateral rights, offering suggestions

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## Mexico

for preventing abuses. 1000 w. *Eng & Min Jour*—Jan. 26, 1907. No. 81958.

State Provisions for Location of Lode Claims. R. S. Morrison. Explains the procedure necessary in Nevada to secure a claim. 2500 w. *Ores & Metals*—Sept. 5, 1907. No. 86813.

Re-locating Mineral Lands. Rossiter W. Raymond. A discussion of court decisions bearing on the rights of original locators and re-locators of mineral claims on public lands. 2000 w. *Eng & Min Jour*—July 20, 1907. No. 85839.

### Machinery.

The Mechanical Engineering of the Mine. Charles C. Christensen. An illustrated summary of machinery that has become an important factor in the mining, treatment, and dressing of ore. 5500 w. *Engineering Magazine*—Oct., 1907. No. 87277 B.

### Magnetic Separation.

Roasting for Magnetic Concentration of Zinc Ores. Frank H. Trego. A comparison of work of a cylindrical furnace commonly used in southwestern Wisconsin with that of a new circular table roaster. 2500 w. *Eng & Min Jour*—March 30, 1907. No. 83355.

Improved Magnetic Separating Machinery. R. T. Clegg. Illustrates and describes a new form of roaster and magnetic separator, designed by E. Hedburg for the treatment of complex ores containing lead, zinc, copper and iron in combination. 1000 w. *Min Wld*—July 20, 1907. No. 85832.

The Separation of Tin-Oxide from Wolfram. Amos Treboar and Gurth Johnson. Brief account of experimental work. 600 w. *Inst of Min & Met, Bul.* 36—Sept. 19, 1907. No. 87560 N.

See also Magnetic Concentration, under IRON AND STEEL.

### Magnetometric Prospecting.

Magnetic Observations in Geological and Economic Work. Henry Lloyd Smyth. Explains the construction of the dial-compass and the magnetometer, and the fields to which each is adapted. Ills. 4000 w. *Ec Geol*—June, 1907. Serial 1st part. No. 86486 D.

The Locating of Ore by Electricity (Das Aufsuchen von Erzen mittels Elektrizität). Herr Petersson. An explanation of the method of locating and determining the extent of ore bodies used by the Electrical Ore Finding Company, London. Ills. 2500 w. *Glückauf*—July 20, 1907. No. 86239 D.

### Mexico.

Mining and General Progress in Mex-

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## Mexico

ico. Manuel Diaz Barriga. Gives information showing the importance of mining in Mexico. 1400 w. *Min Jour*—March 23, 1907. No. 83422 A.

Peculiar Formations of the Mexican Arid Region. Robert T. Hill. Illustrated description of peculiar formations in desert regions. 4500 w. *Eng & Min Jour*—April 6, 1907. No. 83519.

The Mines of Planchas de Plata. F. J. H. Merrill. Describes the interesting geology of this mining district of Sonora, the character of the ore bodies, and treatment of the ore. Map 1200 w. *Eng & Min Jour*—Dec. 15, 1906. No. 80986.

The History of Mining Developments in Mexico. T. C. Graham. Brief review. 2500 w. *Min Wld*—Oct. 26, 1907. No. 87946.

Mexico: Its Geology and Natural Resources. Robert Thomas Hill. An interesting illustrated study of the geology, mineralization, etc. 5000 w. *Min Wld*—Oct. 26, 1907. No. 87942.

The Economic Progress of Mexico Since Early Times. Charles C. Schnatterbeck. Illustrated historical review. 8000 w. *Min Wld*—Oct. 26, 1907. No. 87940.

The West Coast of Mexico. Dwight E. Woodbridge. Notes on the resources of the country, the transportation, business methods, and labor conditions. 2700 w. *Eng & Min Jour*—Aug. 31, 1907. No. 86684.

Some Notes on a Journey Through Mexico. Dwight E. Woodbridge. Illustrated description of the country, its transportation facilities, etc. 4000 w. *Min Wld*—Oct. 26, 1907. No. 87944.

Traveling on the West Coast of Mexico. Dwight E. Woodbridge. Illustrated description of the region and of the business and mining conditions. 3500 w. *Eng & Min Jour*—Oct. 5, 1907. No. 87463.

Geology of Sierra Almoloya, Mexico. Robert Thomas Hill. Illustrated description of this range, its geologic structure and mineralization. The ores are valuable for their size and variety, which consist of about equal values in gold, silver, copper, lead, with zinc, iron, and manganese lime flux. 3000 w. *Min Wld*—April 27, 1907. No. 83975.

Mineral Resources on Kansas City, Mexico & Orient Railway. James W. Malcolmson. Extract from a recent report of this railway, describing the mines in Mexico. 2500 w. *Min Wld*—Oct. 26, 1907. No. 87948.

Characteristics of Some Mexican Mining Regions. Robert T. Hill. Discussion of relationships between geographic fea-

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## Mine Locomotives

tures and economic resources in Chihuahua, Sonora, and Western Sierra Madre. Ills. 3500 w. *Eng & Min Jour*—Oct. 5, 1907. No. 87464.

### Mine Air.

Witwatersrand Mine Air: Recent Investigations. James Moir. Briefly explains a method of testing the air, invented for the use of Inspectors of Mines, giving results obtained. 3500 w. *Jour Chem Met & Min Soc of S Africa*—Sept., 1906. No. 80470 E.

### Mine Dam.

A Mine Dam to Recover Flooded Workings. John H. Haertter. Plan and description of how difficulties were overcome in constructing a dam to permit unwatering flooded coal-mine workings. 1800 w. *Eng & Min Jour*—Aug. 17, 1907. No. 86431.

### Mine Lamp.

A Portable Acetylene Mine-Lamp. Edwin O. Dane. Describes this type of lamp as used in Mexican mines. Illus. 500 w. *Min & Sci Pr*—July 6, 1907. No. 85524.

### Mine Locomotives.

Modern Electric Switching and Mining Locomotives and Cars. Frank C. Perkins. Illustrates and describes some recent types of electric shunting and mining locomotives and electric dump cars. 3500 w. *Elec Engr, Lond*—Nov. 2, 1906. No. 80349 A.

Unique European Electric Mining Locomotives. Frank C. Perkins. Illustrates and describes types used in Austria, Germany, and Belgium. 2500 w. *Min Wld*—Sept. 7, 1907. No. 86780.

Explosion of Air Locomotive. An illustrated account of the explosion of a compressed air mine locomotive while being charged, with some suggestions as to the probable cause. 2500 w. *Mines & Min*—July, 1907. No. 85422 C.

The Prevention of the Risk of Fire in the Use of Benzol Mine Locomotives (Die Verhütung der Brandgefahr bei Benzol Grubenlokomotiven). Herr Russell. Illustrates and describes this type of locomotive and safe ways of storing and using benzol underground in coal mines. 2000 w. *Glückauf*—April 27, 1906. No. 84153 D.

Tests with Various Types of Mine Locomotives (Versuche mit Grubenlokomotiven Verschiedener Systeme). Herr Wex. Gives results of elaborate tests, under service conditions, of benzol, benzine and electric locomotives, the latter including both accumulator and trolley types. Ills. Serial. 2 parts. 11000 w.

# MINING AND METALLURGY

## Mine Signals

Glückauf—May 4 and 11, 1907. No. 84959 each D.

See also Haulage, under MINING.

## Mine Signals.

Electric Shaft Signals (Die Elektrischen Schachtsignalanlagen). Herr Schmiede. Illustrates and describes various types of bell, methods of installation, etc., giving wiring diagrams. 2000 w. Glückauf—July 6, 1907. No. 86234 D.

Electric Signal System for Mines. Carl L. C. Fichtel. Illustrates and describes a new system installed in some of the copper mines of the Lake Superior region. 900 w. Eng & Min Jour—Oct. 26, 1907. No. 87893.

## Mining Terms.

Spanish-American Mining Terms. H. E. West. An explanation of some of the common words and phrases used in mining regions of Central America. 1800 w. Min & Sci Pr—Feb. 2, 1907. No. 82209.

## Minor Metals.

Production of Other Metals and Minerals. Reports the production during 1906 of antimony, tin, quicksilver, and other minerals. 4000 w. Eng & Min Jour—Jan. 5, 1907. No. 81473.

## Missouri.

Mining and Milling at Fredericktown, Missouri. Robert B. Brinsmade. Describes the mines, deposits, and methods of stoping in clay ores, crushing, jigging, etc. The deposits contain copper, nickel and cobalt sulphides associated with the galena. Ills. 3500 w. Mines & Min—Nov., 1906. No. 80192 C.

Minerals in Missouri. E. R. Buckley. Information in regard to the minerals of value found in this state and their development. Zinc, lead, and coal are the most valuable. 2000 w. Min Wld—March 30, 1907. Serial. 1st part. No. 83381.

See also Joplin District, under MINING.

## Montana.

Annual Address. Bertram H. Dunshee. Presidential address, considering recent improvements in the mining and treatment of ores, especially in Montana. 9000 w. Jour Assn of Engng Soc—April, 1907. No. 84526 C.

## Mules.

Care of Mine Mules. Dr. I. C. Newhard. An illustrated article giving information in regard to feed and feeding, harnessing, shoeing and care of hoofs, stables, etc. 3000 w. Mines & Min—Sept., 1907. No. 86766 C.

## MINING

### New Caledonia.

New Caledonia and Its Minerals. G. M. Colvocoresses. Information in regard to the geography, geology, and mineral resources of an interesting island in the South Pacific, its discovery, exploration and settlement. Ills. Nickel, chrome and cobalt ores are the chief minerals exported. 2500 w. Eng & Min Jour—Sept. 21, 1907. No. 87161.

### New South Wales.

See also same title, under INDUSTRIAL ECONOMY.

### New Zealand.

The Salient Features of the Economic Geology of New Zealand. James Mackintosh Bell. Describes the chief physiographic features, and the distribution of coal, petroleum, iron ore, copper, gold, platinum, tin, and other minerals. 4400 w. Ec Geol—Sept., 1906. No. 80856 D.

Prize Essay on the Mineral Resources of New Zealand. Robert McIntosh. A lengthy discussion of the present condition and future prospects of the mineral resources of New Zealand, and the best means of fostering their development. 56500 w. N Z Mines Rec—Jan. 16, 1907. No. 83208 B.

The Mineral Resources of New Zealand. James Williams. Second prize essay on the present condition and future prospects of the mineral resources of New Zealand, and the best means of w. N Z Mines Rec—Feb. 16, 1907. No. 83863 B.

The Mineral Resources of New Zealand. T. Hilton. Suggestions for the development of the deposits of gold, silver, lead, copper, iron ores, manganese, petroleum, and especially the coal fields. 6000 w. N Z Mines Rec—May 16, 1907. No. 86153 B.

The Mining Industry of New Zealand. P. E. Cheal. Some suggestions for its development. 6800 w. N Z Mines Rec—June 17, 1907. No. 86854 B.

### Open-Cut.

Grab System of Mining at the Grant Mine, Buhl, Minn. Description of the grab system of stripping and mining as installed at this mine. 3000 w. Ir Trd Rev—March 14, 1907. No. 83008.

Nickel Mining in New Caledonia. G. M. Colvocoresses. Describes the methods of mining nickel ores from large and small open workings or quarries on the sides of the mountains, and the method of handling the ore. Ills. 4000 w. Eng & Min Jour—Sept. 28, 1907. No. 87314.

### Ore-Bins.

Steel Ore-Bin Construction. W. R.

## Ore Bins

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### Ore Feeders

Crane. Notes and sketches descriptive of the ore-bins at Shaft No. 3, of the Wol-verine mine in the Lake Superior region. 2000 w. Min & Sci Pr—March 9, 1907. No. 83052.

### Ore Feeders.

Notes on Feeders, with a Description of a New Driving Device. D. J. Pepler. Describes Pepler's Operative Device to Chal-lenge Feeder. 1500 w. Jour Chem, Met, and Min Soc of S Africa—Aug., 1907. No. 87823 E.

### Ore Handling.

See also Ore Unloaders, under ME-CHANICAL ENGINEERING, POWER AND TRANSMISSION.

### Organization.

Suggestions for Mine Staff Organiza-tion. J. Boyd Aarons. Gives a plan for apportioning duties and responsibilities of members of the operating force and conducting the work of the departments of a mine staff, particularly a gold mine. 2500 w. Eng & Min Jour—June 22, 1907. No. 85221.

### Philippines.

Mines and Minerals in the Philippines. Thornton Chase. A report of rich depos-its of coal, iron, copper, lead and gold. 1200 w. Eng & Min Jour—May 4, 1907. No. 84217.

### Plants.

Mistakes in the Design of Mining and Reduction Plants. S. A. Worcester. Calls attention to mistakes noted, espe-cially describing certain installations ob-served. 2000 w. Min & Sci Pr—Feb. 2, 1907. No. 82205.

A New Mine Plant in Germany. B. F. Hirschauer. Illustrated description of an interesting installation at the Thiederhall mines, near Brunswick. 1500 w. Elec Rev, N Y—Sept. 28, 1907. No. 87302.

### Power Plant.

The Hydraulic Compressed Air Power Plant at the Victoria Mine. D. E. Wood-bridge. Illustrated description of this plant in Michigan, its construction, opera-tion, control, regulation and efficiency. 1600 w. Eng & Min Jour—Jan. 19, 1907. No. 81695.

### Prospecting.

Prospecting with Churn Drills. F. S. Pheby. Describes the use of these drills in testing a district for copper. 1200 w. Min & Sci Pr—Dec. 29, 1907. No. 81416.

Prospecting for Rare Minerals and Earths. George E. Walsh. Some sug-gestions of the value of deposits of tung-

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sten, vanadium, molybdenum, etc. 2000 w. Min & Sci Pr—Feb. 16, 1907. No. 82552.

Prospecting in Ungava. J. C. Murray. Begins an illustrated description of this portion of the Labrador peninsula. 1800 w. Serial. 1st part. Can Min Jour—May 1, 1907. No. 84086.

Interesting Cases of Misleading Pros-pecting. George H. Ashley. Deals with cases in eastern coal fields. 1400 w. Min Wld—July 6, 1907. No. 85478.

Practical Points for Prospectors. Matt. W. Alderson. Information from actual experience. 1500 w. Min Wld—Aug. 3, 1907. Serial. 1st part. No. 86113.

### Pumping.

Mine Pumping with Direct Connected Electrically Driven Turbine Pumps. P. H. Moore. Read before the Nova Scotia Min. Soc. An account of the writer's experience with turbines in the Micmac Mines, Nova Scotia, describing the plant. 2800 w. Can Min Jour—May 1, 1907. No. 84088.

Electric Pumping Plant at the Gilly Collieries, Belgium. Dr. Alfred Graden-witz. Short illustrated description. 1000 w. Prac Engr—Aug. 9, 1907. No. 86452 A.

Unwatering the Comstock Lode. Illus-trates and describes an electrical pumping plant installed in Ward shaft. 1000 w. Eng & Min Jour—Nov. 24, 1906. No. 80584.

Electrically-Driven Centrifugal Pump-ing Plant at the Tywarnhaile Mine. W. R. Thomas. A general description of an installation applied to the unwatering of this mine in Cornwall. 3000 w. Inst of Min & Met, Bul 29—Feb. 14, 1907. No. 82625 N.

Discussion on Electrically-Driven Cen-trifugal Pumping Plant at the Tywar-whaile Mine. Discussion of W. R. Thom-as' paper on this subject. 8000 w. Inst of Min & Met, Bul. 30—March 14, 1907. No. 83289 N.

See also Sinking Pumps and Unwater-ing, under MINING.

### Quarrying.

Slate-Quarrying and Dressing. Edgar J. Scaife. Illustrates and describes the methods employed in Wales in quarrying slate for the purpose of conversion into roofing slates. 1800 w. Builder—April 13, 1907. No. 83864 A.

Granite Quarrying in Aberdeenshire. William Simpson. An illustrated descrip-tion of these quarries and the methods of working. 6500 w. Inst of Mech Engra—July, 1907. No. 86354 N.



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## Refrigeration

See also Marbles and Stone, under CIVIL ENGINEERING, MATERIALS OF CONSTRUCTION.

## Refrigeration.

The Adaptation of Refrigeration to Mining. Jos. H. Hart. Considers the application of mechanical refrigeration to cooling very deep mines, to stop water entering a mine, and to remove quicksand and mud, describing the compression and absorption systems. 2000 w. Min Wld—March 2, 1907. No. 82753.

## Reinforced Concrete.

Reinforced Concrete in Mining Operations. Joseph H. Hart. Calls attention to the chief applications thus far. 1500 w. Min Wld—Sept. 28, 1907. No. 87296.

## Safety Appliances.

New Safety Appliances for Mines (Nouveaux Dispositifs de Sécurité dans les Mines). Henri Mamy. Illustrated description of automatic barrier and derail for mine railways and brake for hoisting machinery. 1200 w. Génie Civil—No. 10, 1906. No. 80631 D.

Safety Catches and Safety Brakes. K. Schweder. Outlines the main principles of various catches, and gives a detailed description of a carbonic acid safety brake designed by the writer. Ills. 3500 w. Jour S African Assn of Engrs—March, 1907. No. 83983 F.

Safety Measures in Mining. Donald Macaulay and Louis G. Irvine. Reply to discussion of papers by these authors. 13600 w. Jour of Chem, Met, & Min Soc of S Africa—Dec., 1906. No. 82544 E.

## Sampling.

Some Sampling Results. E. H. Garthwaite. Discusses the question of proper distance between mine samples, especially for gold reefs, giving methods used and results obtained in Rhodesia. 1500 w. Inst of Min & Met, Bul 28—Jan. 10, 1907. No. 82623 N.

## Sand Pumping.

Pumping Sand by Compressed Air. Lucius I. Wightman. Illustrated description of a plant at Ottawa, Ill. 1000 w. Compressed Air—Aug., 1907. No. 86403.

## Shaft-Sinking.

Shaft Sinking Through Water-Bearing Formations. E. Mackay Heriot. Illustrates and describes modern methods and appliances as employed in a German mine. 2400 w. Eng & Min Jour—Dec. 15, 1906. Serial. 1st part. No. 80985.

Cement Method of Sinking Shafts in Wet Ground (Einiges über das Zementverfahren beim Abteufen und Ausbau

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von Schächten in Wasserreichem Gebirge). Julius Divis. Illus. Serial. 2 parts. 5700 w. Oesterr Zeitschr f Berg und Hüttenwesen—Jan. 19 and 26, 1907. No. 83613 each D.

Refrigeration for Shaft Sinking. Richard Stetefeld. A comparison of the new Oetling freezing shield process with the older Poetsch method, giving comparative cost. Ills. 1800 w. Ice & Refrig—Feb., 1907. No. 82122 C.

Care of the Plant in Sinking by Refrigeration. Sydney F. Walker. Causes of interruptions in the operation of this system are discussed, and methods of correcting them. 2500 w. Eng & Min Jour—Oct. 26, 1907. No. 87895.

The Freezing Plant at the Klein-Rosseln Mine at Stieringen, Lorraine (Die Gefrierschacht-Anlage der Grube Klein-Rosseln bei Stieringen, Lothringen). Herr Jüngst. Illustrated description of methods used for sinking through quicksand, describing the freezing process, machines, etc. 1500 w. Glückauf—May 25, 1907. No. 84062 D.

Shaft Sinking by the Freezing Process. Sydney F. Walker. Describes the vertical pipe method used in England, and a new ring process employed in Germany. 4500 w. Eng & Min Jour—Oct. 12, 1907. No. 87575.

Sinking a Shaft Through Quicksand by the Pneumatic Process. Describes difficult shaft sinking near Biwabik, Minn., to open up a rich deposit of iron ore. 2500 w. Eng Rec—July 13, 1907. No. 85543.

Sinking Through Bad Ground. F. W. Adgate. Describes the sinking of a shaft on the Mesabi range, near Biwabik, Minn. Of interest because of unusual difficulties, and the novel application of the pneumatic process. Ills. 2500 w. Min & Sci Pr—Aug. 10, 1907. No. 86408.

Shaft-Building by Raising. W. H. Storms. Illustrates and describes a practicable scheme for shaft-building by means of raising. 2000 w. Min & Sci Pr—Feb. 23, 1907. No. 82750.

Raising and Enlarging a Shaft (Schachthochbrechen mit Erweiterung von unten nach oben). Herr Herbst. Illustrated description of shaft raising methods at a mine in Germany, with costs. 2000 w. Glückauf—June 22, 1907. No. 85632 D.

Ventilation of Shafts During Sinking Operations. Gives diagrammatic views and description of an arrangement of "Sirocco" plant for ventilating shafts. 1200 w. Ir & Coal Trds Rev—July 19, 1907. No. 86002 A.

Electrically Operated Sinking - Plant.

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## Shaft Sinking

Trans. abstract of article by W. Philippi, in *Elektrotechnische Zeitschrift*. Illustrated description of the plant recently installed at the Wilhelmina Pit, near Haarlem, as typical of this class of work. 900 w. *Elec Rev, Lond*—Jan. 25, 1907. No. 82142 A.

Shaft Sinking in Butte, Montana. B. H. Dunshee. Describes the size, timbering, blasting, plumbing, method of sinking through quicksand, etc. 3000 w. *Mines & Min*—Jan., 1907. No. 81399 C.

Sinking the Allan Shafts. H. E. Coll. Read before the Nova Scotia Min. Soc. Describes the equipment, sinking operations, method of timbering, etc. 3800 w. *Can Min Jour*—May 1, 1907. No. 84084.

Sinking of Bentley Colliery. J. W. Fryar and Robert Clive. Read before the Inst. of Min. Engrs. An account of difficult sinking through quicksand. 3000 w. *Col Guard*—Sept. 6, 1907. No. 87073 A.

The Hydraulic Shaft Borer (Der Hydraulische Schachtbohrer). Herr Schlüter. Describes a device for boring full-size shafts, with details of power requirements, labor, costs, etc. Ills. 5300 w. *Glückauf*—Sept. 7, 1907. No. 87619 D.

See also Sand Pumping and Sinking Pumps, under MINING; and Shafts, under CIVIL ENGINEERING, CONSTRUCTION.

## Siberia.

Mining on the Kirghese Steppes. H. E. West. An illustrated account of an interesting trip through Southern Siberia, describing the conditions found, the ancient and modern mines, the deposits, etc. 2500 w. *Eng & Min Jour*—Feb. 23, 1907. No. 82566.

Siberian Mining Labor. C. W. Purington. Information concerning the classes from which mining laborers come in various parts of Siberia and Russia. Does not think the Russian laborers a very comfortable class to get along with. 1500 w. *Min Jour*—April 6, 1907. No. 83741 A.

A Brief Sketch of the Lena District, Siberia. C. W. Purington. Map and description of the physical features, geology, and gold-bearing gravels. 2500 w. *Min Jour*—April 20, 1907. No. 83998 A.

Mining and Metallurgy in the Altai Region, Siberia (Berg-Hütten-und Salinenwesen im Altai). F. Thiess. Map and statistical account of mineral products, including gold, silver, copper, coal and salt, of the Altai Mountain region, in southern Siberia. 1000 w. *Oest Zeitschr f Berg u Hüttenwesen*—Nov. 17, 1906. No. 81114 D.

Siberian Mines and Mining Conditions. A. L. Simon. Notes of the history, cli-

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mate, traveling conditions, mining laws, the different districts; the iron mines, placer mining, copper mines, prospecting, labor conditions and related subjects. 10000 w. *Inst of Min & Met, Bul. No.* 32—May 16, 1907. No. 85040 N.

## Sinking Pumps.

Improvements in the Vertical-plunger Sinking Pump. A. H. Hale. Discusses defects in the design of sinking pumps suggesting improvements. Ills. 1200 w. *Power*—Sept., 1907. No. 86672 C.

## Skip.

A Single Balanced Skip for Lowering in Inclined Workings. S. A. Worcester. Illustrated description of a new installation at the Liberty Bell mine, Telluride, Colo., explaining its advantages and economy. 2000 w. *Eng & Min Jour*—Jan. 26, 1907. No. 81955.

## Smelter Smoke.

The Smelter Smoke Problem. F. W. Traphagen. Read before the West. Assn. of Tech. Chem. & Met. Considers the possibility of damage to soil, to crops and to live stock, concluding that in some cases acid gases from smelter smoke may do damage, and recommending high stacks. 3000 w. *Min Rept*—March 14, 1907. No. 83085.

The Disposal of Smelter Smoke. Herbert Lang. Suggestions that smoke be conveyed by flue to remote places where it will be harmless. 2500 w. *Eng & Min Jour*—June 29, 1907. No. 85329.

## Smelting.

The Location of Smelting Works. Herbert Lang. Advocates the one level plan, considering its advantages as compared with the terrace site. 3500 w. *Eng & Min Jour*—March 23, 1907. No. 83226.

## Solutions.

On a New Method for the Preparation of Standard Solutions. S. F. Acree and R. F. Brunel, in *Am. Chem. Jour.* Describes the sodium bicarbonate method for estimating the strength of acid solutions, giving examples showing its accuracy and convenience. 2000 w. *Min Rept*—Dec. 20, 1906. No. 81224.

## South America.

The Present State of Mining and Metallurgy in Chili (Le Chili Minier et Metallurgique au Point de Vue le Plus Recent). Ch. Vattier. A general review of the whole country, taken province by province. 8000 w. *Mém Soc Ing Civ de France*—Sept., 1906. No. 80632 G.

Colombia; Its Resources and Its Development. J. T. O'Brian. Information gath-

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## South Wales

ered during several years of research. Reports fertile lands, favorable climate, inexhaustible forests, mining prospects of promise, great natural wealth almost undeveloped. 2500 w. *Min Wld*—May 25, 1907. No. 84605.

The Mineral Wealth of the Province of Santiago de Chuco, Peru. F. Málaga Santolalla. Describes this region of the Andes, and the deposits of silver, copper, lead, and other minerals. 3000 w. *Min Jour*—Sept. 28, 1907. Serial. 1st part. No. 87518 A.

## South Wales.

Mining and Metallurgy in South Wales. Edward Walker. An account of this district, its coal deposits, copper smelting, lead and nickel ores, etc. Map. 1800 w. *Eng & Min Jour*—July 13, 1907. No. 85548.

## Stoping.

Stoping Systems at Broken Hill, Australia. A. J. Moore. Illustrates and describes methods devised to meet the conditions encountered in mining large bodies of sulphide ores. 4200 w. *Mines & Min*—May, 1907. No. 84061 C.

Stoping with the Air-Hammer Drill. G. E. Wolcott. Gives a record of experience in stoping and other mine work with the air-hammer drill at Cripple Creek. 1500 w. *Eng & Min Jour*—July 20, 1907. No. 85843.

## Stores Keeping.

Keeping Account of Supplies. Matt. W. Alderson. The present article is introductory to a discussion of methods of accounting for mining supplies. 1200 w. *Min & Sci Pr*—Aug. 31, 1907. Serial. 1st part. No. 86794.

## Subsidence.

Mine Subsidence. Alex. Richardson. Gives conclusions reached from a study of the surface effects of subsidence, giving diagrams showing the caving of various mines, discussing methods of protection and the subject in general. 4200 w. *Jour Chem, Met & Min Soc of S Africa*—March, 1907. No. 84433 E.

Subsidence in Underground Mines. Alexander Richardson. A summary of investigations, with suggestions as to means of prevention. 4000 w. *Eng & Min Jour*—Aug. 3, 1907. No. 86102.

## Sulphides.

A Process for Oxidizing Metallic Sulphides in Ores. N. Lebedeff and B. Pomeranzoff. Describes a process of preparing ores containing sulphides for final treatment by wet and dry

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means, so that the metal may be extracted. 700 w. *Eng & Min Jour*—Dec. 8, 1906. No. 80885.

A New Application of Chlorine in Metallurgy. Charles E. Baker. Read at N. Y. meeting of the Am. Elec.-Chem. Soc. Deals with the manner of treating sulphide ores. 1800 w. *Min Rept*—Oct. 24, 1907. No. 87919.

## Surveying.

Mine Surveying and Geodetic Instruments of Prof. O. Cséti (Markscheiderische und Geodätische Instrumente vom Prof. O. Cséti). Eduard Dolezal. Illustrates and describes new and improved instruments invented by Prof. Cséti of the Royal Hungarian College of Mines. Serial. 1st part. 3000 w. *Oest Zeitschr f Berg u Hüttenwesen*—May 18, 1907. No. 84945 D.

The Verschoyle Pocket Transit. W. Denham Verschoyle. An illustrated description of this instrument. 600 w. *Bul Am Inst of Min Engrs*—July, 1907. No. 85926.

Some Practical Points on Mine Surveying. Laurence C. Hodson. Suggestions for work under the conditions often met with in mines. 2000 w. *Eng & Min Jour*—July 20, 1907. No. 85842.

A New Method of Shaft Connection. Henry Briggs. Discusses the causes of deflection of the wires in shafts, and proposes a new method, stating the advantages. 1800 w. *Eng & Min Jour*—Sept. 14, 1907. No. 87005.

See also Magnometric Prospecting, under MINING; and Surveys, under COAL AND COKE.

## Tailings Disposal.

Dumping Residue at Kalgoorlie. M. W. von Bernewitz. An illustrated article explaining conditions and showing the necessity of using conveyors. 900 w. *Min & Sci Pr*—Sept. 21, 1907. No. 87258.

## Timbering.

Timber Used in Metal Mines. R. S. Kellogg. Abstract of Circular 49, U. S. Dept. of Agri., giving tables showing the kind and quantity of timber used in mines of precious metals and of iron. 800 w. *Min Wld*—Feb. 9, 1907. No. 82211.

Mine Timbering at Lake Superior. W. R. Crane. A discussion of the application of various systems. Ills. 1200 w. *Eng & Min Jour*—Nov. 10, 1906. No. 80367.

Square-Set Timbering at Bingham, Utah. Claude T. Rice. Illustrated description of a new method of framing, in use at Bingham, Utah, with brief criticism of the system. 1200 w. *Eng & Min Jour*—Nov. 3, 1906. No. 80250.

## Timbering

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## Timbering

Square-Set Mining and a Modification of It. Claude T. Rice. Outlines a method proposed to better square-set practice. 3500 w. *Min & Sci Pr*—Sept. 21, 1907. No. 87257.

Setting Timber in Anthracite Coal Mines. John H. Haertter. Gives reasons why it would be impracticable to have a special timber corps instead of having the props placed by the miners. Ills. 3300 w. *Eng & Min Jour*—Aug. 31, 1907. No. 86686.

Timbering Mines in the Joplin District, Missouri. Doss Brittain. Illustrates and describes methods of timbering during sinking and driving through soft and loose ground in use in the lead and zinc mines of this region. 2000 w. *Ores & Metals*—Sept. 5, 1907. No. 86812.

Re-timbering the Kearsarge Shaft. Lee Fraser. Describes work made necessary by a fire. Sections. 700 w. *Min & Sci Pr*—Oct. 5, 1907. No. 87541.

Preservation of Mine Timber. John M. Nelson. Gives conclusions from experimental work, with various methods of treatment and the cost. Ills. 1200 w. *Min Wld*—May 25, 1907. No. 84604.

The Preservation of Mine Timber from Decay. An account of experiments made with different preservatives and different methods of applying, with a comparison of costs. Ills. 1200 w. *Mines & Min*—May, 1907. No. 84066 C.

The Use of Steel Props and Girders in Mines. James Ashworth. Information in regard to the styles of props, and the cost of steel as compared with wooden girders in England. 1200 w. *Mines & Min*—April, 1907. No. 83402 C.

Concrete Roof Supports. A successful application of concrete to replace timber roof supports in the Shamokin, Pa., region, is illustrated and described. 1500 w. *Mines & Min*—July, 1907. No. 85421 C.

See also Timber Preservation, under CIVIL ENGINEERING, MATERIALS OF CONSTRUCTION.

## Tunnels.

Development and Transportation Tunnel Enterprises in the Argentine District, Colorado. Brief accounts of the more important of the tunnel enterprises of this district, and of the development and equipment of properties. 3000 w. *Min Rept*—Dec. 6, 1906. No. 80896.

The Cost of a Small Rock Tunnel. Francis L. Prunyn. Discusses items of expense which should be considered in a cost estimate for such work. 1100 w. *Compressed Air*—June, 1907. No. 85261.

Western Practice in Tunnel Driving.

## MINING

W. P. J. Dinsmoor. Illustrates and describes the methods employed in driving the Ophelia Tunnel in the Cripple Creek District. 2000 w. *Min Rept*—July 11, 1907. No. 85551.

See also Drainage and Electric Power, under MINING; and Tunnels, under CIVIL ENGINEERING, CONSTRUCTION.

## United States.

The Development of the Metal Mining Industry of the Western States. Walde-mar Lindgren. A summary of recent mining history, the methods, conditions, recent improvements, and progress. 3000 w. *Min & Sci Pr*—Dec. 1, 1906. No. 80863.

The Development of the Metal Mining Industry in the Western States. Walde-mar Lindgren. An outline of the gold and silver mining, considering placer mining, gold-quartz mining, silver mining, reduction works, etc. 5000 w. *Am Min Cong*—1906. No. 87364 N.

Review of Mining in the United States. Reviews the generally prosperous conditions, giving reports by States. 20000 w. *Eng & Min Jour*—Jan. 5, 1907. No. 81476.

## Unwatering.

The Unwatering of Mines in the Anthracite Region. R. V. Norris. An illustrated description of pumping methods used, their cost, etc. 4000 w. *Engineering Magazine*—Oct., 1907. No. 87284 B.

Unwatering by Means of an Inclined Skip. Douglas Muir. States the conditions and describes the work. Ills. 900 w. *Eng & Min Jour*—Oct. 19, 1907. No. 87793.

Unwatering Plant for the Lindal Moor Mines. Illustrated description of the pumping plant for unwatering these iron mines. 1500 w. *Engng*—Oct. 11, 1907. No. 87838 A.

See also Drainage, Mine Dam and Pumping, under MINING.

## Utah.

The Mining and Mineral Resources of Utah. John Dern. Considers a few of the leading mining districts. The minerals of importance are those of gold, silver, copper, and lead, but other deposits of value are found. 4000 w. *Am Min Cong*—1906. No. 87365 N.

The Mining and Mineral Resources of Utah. John Dern. Information concerning the location and output of different regions, and the large deposits of gold, silver, copper, lead, coal, iron, and valuable minerals of various kinds. 4000

# MINING AND METALLURGY

## Valuation

w. Mines & Min—Jan., 1907. No. 81398 C.

## Valuation.

Notes on the Estimation and Valuation of Ore Reserves. W. R. Tait. A record of actual practice at the valuation of a mine on the Rand. 2300 w. Jour Chem, Met & Min Soc of S Africa—Jan., 1907. No. 83097 E.

Development Results vs. Stope Results. E. H. Garthwaite. Gives a comparison of results. 500 w. Inst of Min & Met, Bul 29—Feb. 14, 1907. No. 82626 N.

## Ventilation.

Underground Fans as Main Ventilators. Alfred J. Tonge. Abstract from the *Trans.* of the Inst. of Min. Engrs. Describes an installation in an English colliery which has proved successful, and explains conditions under which they may prove more economical than fans at surface 4500 w. Mines & Min—Nov., 1906. No. 80194 C.

Underground Fans as Main Ventilators. James Tonge. A reply to criticisms of an article on this subject. 2200 w. Mines & Min—March, 1907. No. 82763 C.

Statistical Experiments in Air Measurement at the Hermine Shaft of the Kohlwald Mine (Statische Wettermessungsversuche auf Hermineschacht der Grube Kohlwald). Herr Seidl. Gives numerous tables of the results of elaborate tests on the circulation of air in mines with formulæ. Ills. 3500 w. Glückauf—May 18, 1907. No. 84960 D.

On the Practical Measurement of Air (Ueber die Praktische Ausführung von Wettermessungen). Kurt Seidl. Illustrates and describes a method of air measurement by anemometer readings at a number of points in a specially-made opening, giving formulæ. 1800 w. Glückauf—July 20, 1907. No. 86241 D.

Concrete Overcasts in Coal Mines. John H. Haertter. Illustrates and describes methods of construction, and advantages of concrete and steel over wood in ventilating coal mines. 2500 w. Eng & Min Jour—Sept. 7, 1907. No. 86809.

Test of a Mine Fan at the Zinc-Lead

## MISCELLANY

Mine, Neu-Diepenbrock-III (Untersuchung eines Grubenventilators auf der Zink- und Bleierzgrube Neu-Diepenbrock III). Describes the method of testing and gives the results in tables and curves. 2000 w. Glückauf—Aug. 3, 1907. No. 86938 D.

Deficiencies in Mine Ventilation. Thomas A. Mather. Read at Min. Inst. at Latrobe, Pa. The causes are discussed and the relative degrees of responsibility of the different people contributing to ventilation. 2800 w. Mines & Min—Oct., 1907. No. 87457 C.

See also Mine Air, under MINING.

## Water Race.

The Water Race for the Chuquitambo Gold Mines, Peru. G. F. Heath. Describes the construction of this water race, giving a statement of the conditions, the cost, and related matters of interest. 2500 w. Inst of Min & Met—Bul No. 27—Dec. 13, 1906. No. 81264 N.

## Wire Rope.

See Hoisting, under MINING; and Wire Rope, under MECHANICAL ENGINEERING, MATERIALS OF CONSTRUCTION.

## Wisconsin.

Mining and Mineral Resources of Wisconsin. W. O. Hotchkiss. Describes the geological formations of the state, the ore deposits and their development. Lead and zinc ores are principally considered, but iron and other metallic minerals are of value. 1200 w. Am Min Cong—1906. No. 87370 N.

## Württemberg.

The History of Mining in Württemberg (Württemberg's Erzbergbau in der Vergangenheit). Axel Schmidt. A historical review of silver, copper, cobalt, nickel, and iron mining industry in this district of Germany. 5000 w. Glückauf—Aug. 17, 1907. No. 86941 D.

## Wyoming.

The Present Status of Wyoming Mining. Henry C. Beeler. Reports progress and encouraging outlook for the low-grade copper and gold ores of this state. 1500 w. Min Rept—Nov. 15, 1906. No. 80455.

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## Aluminum.

The Metallurgy of Aluminum in 1906. Joseph W. Richards. A review of the industry showing that the demand exceeds the supply, and that the output for 1907 will probably be several times as

great as 1906. Ills. 2800 w. Eng & Min Jour—June 8, 1907. No. 84836.

## Antimony.

The Antimony Industry. F. T. Harvard. Discusses the value and uses of antimony, the methods of smelting, etc.

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## Antimony

2500 w. Eng & Min Jour—Dec. 1, 1906. No. 80794.

The Volumetric Estimation of Antimony. James Darroch. Describes a method said to give excellent results with all ores and alloys containing antimony, which is much more accurate than the gravimetric methods, and almost as speedy as the dry assay. 1200 w. Min & Sci Pr—Jan. 19, 1907. No. 81921.

Notes on Antimony Smelting. G. Pau-trat. From *Revue di Chimie Ind.* Describes the plant and processes employed at a smelter in Mayenne, France, for the production of antimony metal and oxides from stibnite ore. 1500 w. Eng & Min Jour—Sept. 14, 1907. No. 87007.

## Arsenic

The Arsenic Industry of Cornwall. Il-lustrated description of the process of manufacture. 2000 w. Sci Am Sup—Oct. 5, 1907. No. 87475.

## Asbestos

Asbestos. An illustrated article discuss-ing the commercial aspects and giving general information of the asbestos indus-try. Also The Canadian Asbestos. Fritz Cirkel. A review of progress. Ills. 3000 w. Can Min Jour—May 15, 1907. No. 84400.

Asbestos; Its Mining, Preparation, Mar-kets and Uses. E. Schaaf-Regelman. An illustrated review of the evolution of this industry and the production and uses. 3500 w. Engineering Magazine—Oct., 1907. No. 87279 B.

Asbestos Mining in the United States. J. S. Diller. Brief accounts of producing districts. 1500 w. Min Wld—Sept. 21, 1907. No. 87193.

The Asbestos Industry of Quebec. Ralph Stokes. Illustrates and describes the mines and quarries in the present ar-ticle. 2200 w. Min Wld—Oct. 19, 1907. Serial. 1st part. No. 87801.

## Asia

A Journey to Central Asia. A. Adias-sewick. General description with special reference to the great mineral wealth. 11000 w. Inst of Min & Met, Bul. 36—Sept. 19, 1907. No. 87559 N.

Minerals and Metalliferous Lodes of Kulu and Lahaol, Kangra District, Pun-jab Himalayas. F. C. Hughes. Informa-tion in regard to the geology and min-eral deposits. Iron, galena, and sapphires were found in Kulu; gold, silver-lead ores, and other minerals in Lahaol. 1500 w. Inst of Min & Met, Bul 29—Feb. 8, 1907. No. 82627 N.

## MISCELLANY

### Barytes

The Barytes Industry of the South. Ed-ward K. Judd. Illustrates a plant in Knoxville, Tenn., for treating barytes, showing that it need not be expensive. 1800 w. Eng & Min Jour—April 20, 1907. No. 83841.

### Bauxite

The Bauxite Industry of the South. Ed-ward K. Judd. Information in regard to the Georgia-Alabama district and its de-velopment. 2000 w. Eng & Min Jour—March 23, 1907. No. 83227.

### Bismuth

Electrolytic Refining of Bismuth. Dr. Arnold Mohn. Describes the process used with Mexican lead-bismuth bullion. 1200 w. Elec-Chem & Met Ind—Aug., 1907. No. 86342 C.

### Borax

The Borax Deposit of Salinas, Near Arequipa, Peru. A. Jochamowitz. De-scribes this deposit, considering its origin and constitution. 1500 w. Min Jour—Aug. 24, 1907. No. 86725 A.

Death Valley Borax. O. M. Boyle, Jr. Brief account of the deposits and the con-dition of the industry. Ills. 1200 w. Cal Jour of Tech—Sept., 1907. No. 87428.

### Calcium

Critical Discussion of the Electrolytic Method for the Production of Calcium (Kritische Betrachtungen über die Elek-trolytische Gewinnung des Calciums). Carl Bürgel. Description of process. Il-lus. Serial. First and second instalments. 1300 w. Elektrotechnische Zeitschrift—Jan. and Feb., 1907. No. 82937 each G.

### Carbon

Carbon; a Remarkable Mineral. I. C. Yawger. Interesting information in re-gard to this mineral, found only in a small section of Brazil. Ills. 3000 w. Min Wld—March 30, 1907. No. 83378.

### Cement

Advances in Cement Technology, 1906. Edwin C. Eckel. Considers the growth of the cement industry, kilns and kiln prac-tice, and matters related. 3500 w. Cement—Sept., 1907. No. 87399 C.

Statistics of Cement Industry in 1906. L. L. Kimball. Considers the general con-ditions, the production, with report by states. 7000 w. Cement—Sept., 1907. No. 87400 C.

See also Grinding Machines, under MINING.

### Chemistry

Annual Review of Mineral Chemistry

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## Cobalt

(Revue Annuelle de Chimie Minérale). A. Mailhe. A review of the progress of mineral chemistry in 1906, dealing with high temperatures, metalloids, metals and metallic salts. 5700 w. Rev Gen des Sci—Feb. 28, 1907. No. 82993 D.

## Cobalt.

Cobalt: Its Occurrence and Uses. Joseph Hyde Pratt. Information concerning this mineral and its uses, and localities in North Carolina where it has been found. 1500 w. Min Wld—May 4, 1907. No. 84235.

## Corundum.

Corundum in Ontario. D. G. Kerr. Read before the N. of England Inst. of Min & Mech. Engrs. Describes the occurrence, mines, mill, etc. 4000 w. Can Min Rev—Nov., 1906. No. 80518 B.

Corundum at Craigmont. H. E. T. Haultain. Describes the deposits of Craig Mountain, the discovery, mining operations; and gives information relating to the applications of corundum. Ills. 3500 w. Can Min Jour—Aug. 1, 1907. No. 86125.

## Crystals.

Modern Theories of Crystal Structure (Les Théories Modernes Sur La Structure Des Mileux Cristallisés). G. Wyrouboff. 8100 w. Revue Générale des Sciences—Dec. 30, 1906. No. 82312.

## Deutschman's Cave.

Deutschman's Cave, Near Banff, B. C., Canada. W. S. Ayres. Map, illustrations, and description of this cavern, discovered Oct. 22, 1904. 4200 w. Bul Am Inst of Min Engrs—Jan., 1907. No. 82515 C.

## Diamonds.

The Origin and Occurrences of the Diamond. Prof. T. W. E. David. A review of the occurrence of diamonds in matrix, with a discussion of the genesis of Oakley Creek diamonds in New South Wales. 3300 w. Min Jour—Aug. 24, 1907. No. 86724 A.

The Origin of Diamonds. Dr. F. W. Voit. Read before the Geol. Soc. of S. Africa. Discusses the origin of the diamond in pipes, basing the theory on the manner in which the diamond can be artificially produced. 2500 w. Min Jour—Sept. 14, 1907. No. 87181 A.

Diamonds in the United States. Douglas B. Sterret, in Mineral Resources of the U. S., 1906. Describes a discovery by M. J. Cooney, on the Feather River, California, and other finds on record. 1200 w. Min Rept—Oct. 10, 1907. No. 87578.

## MISCELLANY

The Occurrence of Diamonds in the Drift of Some of the Northern States. Dr. Robert Bell. Discusses the question of the area from which the diamonds have been derived. 1500 w. Jour Can Min Inst—1906. No. 83810 N.

A Visit to the De Beers Consolidated Diamond Mines. Edgar P. Rathbone. Brief description of methods, mechanical and labor-saving appliances, observed during a recent visit. 1700 w. Inst of Min & Met, Bul 28—Jan., 1907. No. 82622 N.

De Beers Consolidated Diamond Mines. Notes from a paper by Alpheus F. Williams describing the present position, equipment, and practice. 4500 w. Min Jour—Jan. 12, 1907. No. 81742 A.

The Occurrence of Diamonds in Matrix at Oakley Creek, Near Inverell, New South Wales. T. W. Edgeworth David. A brief account of the discovery of four diamonds in the original rock matrix. 1000 w. Min & Sci Pr—Jan. 12, 1907. No. 81694.

The Premier Diamond Mine, Transvaal, South Africa. R. A. F. Penrose, Jr. Describes the general features of the diamond deposits in South Africa, and gives illustrated description of the Premier mine. 2500 w. Ec-Geol—April, 1907. No. 85188 D.

Kimberlite Dykes and Pipes. Dr. F. W. Voit. Read before the Geol. Soc. of S. Africa. Describes peculiarities of these diamond mines, studying the origin of the dykes and pipes, and the character of the rock. 2500 w. Min Jour—Sept. 21, 1907. Serial. 1st part. No. 87341 A.

## Exhibition.

Minerals at the Jamestown Exposition. Joseph Struthers. An illustrated brief description of the exhibits of the different states. 4000 w. Eng & Min Jour—Oct. 19, 1907. No. 87794.

## Fluorspar.

Fluorspar. Ernest F. Burchard. Considers its character, occurrence, preparation, and uses, market conditions, and production in 1906. 1500 w. Min Rept—Sept. 26, 1907. No. 87294.

## Graphite.

Canadian Graphite. H. P. H. Brunnell. Abstract of a paper read before the Can. Min. Inst. Gives information concerning the ore deposits, milling, etc. 1200 w. Min Wld—May 18, 1907. No. 84412.

Canadian Graphite. H. P. H. Brumell. An account of this industry, describing the character of the graphite, the methods of treatment, and discussing the de-

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## Gypsum

mands, uses, etc. Ills. 6400 w. Can Min Jour—June 1, 1907. No. 84834.

Separating Graphite on Molybdenite. James Francis Latimer. An account of an invention for an improved process for separating and refining of graphite from graphite material, and molybdenite and other minerals from their gangue. Ill. 1500 w. Min Wld—May 18, 1907. No. 84413.

## Gypsum.

Gypsum in Sussex. W. J. Kemp and G. Alfred Lewis. Read before the Inst. of Min. Engrs. Describes the deposits, the plaster manufacture, and the mines. 2500 w. Ir & Coal Trds Rev—June 14, 1907. No. 85254 A.

Montana Gypsum Deposits. J. P. Rowe. Describes the deposits in different localities, developments, mills, geological formation, etc. Ills. 2500 w. Mines & Min—Sept., 1907. No. 86767 C.

## Iceland.

The Geological Features of Iceland. L. P. Gratacap. Map and illustrated description of this interesting island. 3000 w. Min Wld—Nov. 17, 1906. No. 80458.

Minerals of Iceland. L. P. Gratacap. Illustrates and describes some of the interesting minerals found. 2000 w. Min Wld—March 16, 1907. No. 83087.

## Igneous Rocks.

A Simple Classification of Igneous Rocks. Scott Turner. Gives a table designed to help in the identification of eruptive rocks, with notes. 1400 w. Min & Sci Pr—March 30, 1907. No. 83443.

## Illinois.

The Work of the State Geological Survey. H. Foster Bain. An account of what has been done, and the work proposed, in the geological survey of Illinois. Map. Discussion. 7000 w. Jour W Soc of Engrs—April, 1907. No. 84531 D.

## Jamaica.

Geology of Jamaica, as Related to Its History. Rossiter W. Raymond. Outlines the general natural features, indicating briefly their effect upon the history of the island. 2000 w. Min & Sci Pr—Aug. 3, 1907. No. 86188.

## Kaolin.

Kaolin Mining in Georgia. Otto Veatch. The deposits, method of mining and preparation for market are described. Ills. 1100 w. Eng & Min Jour—Feb. 9, 1907. No. 82192.

## Lead.

Lead Mining in British Columbia. A

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review of the progress made since payment of the bounty on lead was commenced. 2500 w. B C Min Rec—Oct., 1906. No. 80812 B.

Lead Deposits in Northern Kentucky. R. B. Brinsmade. An account of workable lead veins within 50 miles of Cincinnati, O. 1200 w. Eng & Min Jour—April 6, 1907. No. 83518.

A Curious Deposit of Cerussite in Colorado. Robert B. Brinsmade. Describes an unusual deposit in the Terrible Mine, at Ilse, Custer Co. It is not associated with sulphides and other minerals usually found with lead. 1200 w. Eng & Min Jour—May 4, 1907. No. 84215.

The Daly-Judge Mine and Mill, Park City, Utah. Paul A. Gow, Andrew M. Howat, George S. Kruger, and F. H. Parsons. A description of the veins, methods of working and timbering, and report of production. Ills. 4000 w. Mines & Min—Aug., 1907. Serial. 1st part. No. 86099 C.

See also Zinc and Zinc-Lead, under MISCELLANY.

## Lead Assay.

Some Practical Notes on the Lead Assay. C. A. Cooper. Discusses the treatment of a medium grade concentrate and a zinc concentrate low in lead. 2000 w. Min Wld—Sept. 21, 1907. No. 87195.

## Lead Refining.

Tredinnick's Process for Desilverizing Lead. L. S. Austin. Describes the Pattinson process, and the Luce & Rozan improvement, and Mr. Tredinnick's improvement of the latter process. 1600 w. Min & Sci Pr—Jan. 19, 1907. No. 81920.

The Betts Process at Trail, B. C. A. G. Wolf. Describes the electrolytic refining of lead bullion, treatment of gold and silver slimes, and copper sulphate recovery. Ills. 5000 w. Mines & Min—Aug., 1907. No. 86096 C.

See also Electro-Metallurgy, under ELECTRICAL ENGINEERING, ELECTRO-CHEMISTRY.

## Lead Smelting.

A New Matte Separator. R. R. Hedley. Describes a device successfully used in the lead smelting works at Nelson, invented by Henry Harris. Ills. 1200 w. Jour Can Min Inst—1906. No. 83804 N.

Laboratory Experiments in Lime-Roasting a Galena-Concentrate. Discussion of the paper of H. O. Hofman, R. P. Reynolds, and A. E. Wells. 2000 w. Bul Am Inst of Min Engrs—July, 1907. No. 85924.

The Lead-Smelting Works of Port



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### Lead Smelting

Pirie. Guillaume D. Delprat. Illustrates and describes smelting plant where the ores from Broken Hill are smelted and the bullion refined and prepared for market. 2500 w. *Eng & Min Jour*—March 16, 1907. No. 83075.

Laboratory Experiments in Lime-Roasting a Galena Concentrate with Reference to the Savelsberg Process. H. O. Hoffman, R. P. Reynolds and A. E. Wells. Experimental investigation of the effects which variations in the addition of limestone and changes in the volume of blast may exert upon desulphurization, fusibility and losses in lead and silver. 3000 w. *Bul Am Inst of Min Engrs*—Jan., 1907. No. 82510.

See also Smelting, under COPPER; and Silver-Lead, under GOLD AND SILVER.

### Lime.

The Manufacture of Lime and of Carbonic Acid Gas in the Chemical Industry (*La Fabrication de la Chaux et du Gaz Carbonique dans l'Industrie Chimique*). E. Nihoul. The first instalment discusses several types of lime-burning furnaces, methods of firing, operation, products, etc., both theoretically and practically. Ills. Serial. 1st part. 8400 w. *Bull Sci d l'Assn des Elèves*—April, 1907. No. 84903 D.

A New Regime in Lime-Burning Furnaces (*Sopra un Nuovo Regimé nei Forni per la Cottura della Calce*). Frederico Carini. A paper presented before the Milan Chemical Society, discussing hearth, regenerative, and other furnaces. 2800 w. Serial. 1st part. *L'Industria*—Aug. 25, 1907. No. 86905 D.

Notes on the Estimation of Caustic Lime. Edw. H. Croghan. Facts obtained during a series of tests and analyses on certain burnt limes. 4000 w. *Jour Chem, Met, & Min Soc of S Africa*—Aug., 1907. No. 87822 E.

### Manganese.

The Crimora Manganese Mine. E. K. Judd. An account of the geology and methods of mining of this mine in Virginia. 1500 w. *Eng & Min Jour*—March 9, 1907. No. 82818.

Manganese Mining in India. L. Leigh Fermor. A report of this industry, and the methods of mining, giving a comparison with foreign production. 1400 w. *Min Wld*—Jan. 12, 1907. No. 81611.

Prospects of Indian Manganese Industry. A. Ghose. Shows that India has attained a leading position in the manganese market, and gives information of interest. 3500 w. *Jour Soc of Arts*—Aug. 2, 1907. No. 86345 A.

### MISCELLANY

#### Mercury.

The Reduction of Quicksilver Ore. Frank J. Booth. A general criticism, based on a working experience with retorts. Ills. 1800 w. *Min & Sci Pr*—Nov. 10, 1906. No. 80397.

The Mercury Mines of Monte Amiata, Italy. Gives details regarding these mines. 1700 w. *Min Jour*—Dec. 29, 1906. No. 81533 A.

Electro Determination of Mercury and Its Separation from Silver. Henry Julius Solomon Sand. Abstract of a paper from *Jour. of Chem. Soc.*, London. Describes experimental investigations. 1000 w. *Min Rept*—April 25, 1907. No. 84017.

The Use and Care of Mercury. Explains some of the causes of the flouring and sickening of quicksilver, and various methods of remedying the evil. 2500 w. *Min & Sci Pr*—Aug. 17, 1907. No. 86525.

Native Methods of Mining and Smelting Quicksilver Ore in Kweichow, China. Henry Brelich. Notes relating to the wages, prices, exchange, coinage, laws and customs used by the natives in quicksilver mining. 4800 w. *Cassier's Mag*—June, 1907. No. 85181 B.

#### Metallurgy.

Recent Progress in Metallurgy. Alexander E. Outerbridge, Jr. A résumé of the most notable achievements in metallurgy during the past year, showing the great advance in the production of metals. 8300 w. *Jour Fr Inst*—Nov., 1906. No. 80407 D.

Metallurgical Progress in 1906. A summary of the new practice and improvements in gold, silver, lead, copper, and zinc. 6000 w. *Eng & Min Jour*—Jan. 5, 1907. No. 81474.

Recent Developments in Metallurgy. S. F. Kirkpatrick. Gives examples showing the recent advances made. 2200 w. *Can Min Jour*—March 15, 1907. No. 82858.

#### Mica.

Mica in Ontario. E. T. Corkill. Reviews the mica mining industry of Canada, describing the peculiarities of the deposits and the Smith mine. Ills. 1800 w. *Can Min Jour*—June 15, 1907. No. 85214.

#### Microscopic Methods.

The Microscopic Examination of Opaque Minerals. William Campbell. Describes the method employed for preparing the specimens, illustrating the microscopes and accessories. 4500 w. *Ec Geol*—Sept., 1906. No. 80857 D.

#### Mineral Wax.

The Ozokerite (Mineral Wax) Mine

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### Molybdenum

of the Galizische Kreditbank, at Boryslaw, Galicia, Austria. D. M. Chambers. Read before the Inst. of Min. Engrs. Describes wax-mining and treatment. 900 w. Ir & Coal Trds Rev—June 14, 1907. No. 85252 A.

### Molybdenum.

Molybdenite Deposit in Australia. John Plummer. Describes these deposits and the mining and preparation. Ills. 1600 w. Min Wld—March 30, 1907. No. 83382.

A Rapid Method of Determining Molybdenum. James Darroch and C. A. Meiklejohn. Describes an adaptation of the molybdate method of estimating lead, which gives excellent results, both with ores and ferro-molybdenum, stating its advantages. 1000 w. Eng & Min Jour—Nov. 3, 1906. No. 80249.

### Monazite.

The Mining of Monazite. Douglas B. Sterrett. Describes methods of working the deposits of this thorium mineral. 2000 w. Sci Am Sup—Oct. 19, 1907. No. 87744.

### Natural Gas.

Natural Gas Wells and Spring of White River. Arthur Lakes. Illustrated description of the only place in Colorado where natural gas occurs in large volume. 800 w. Min Wld—March 30, 1907. No. 83380.

Extinguishing the Flame of a 600-Pound Pressure, Million-Feet Hourly Capacity, Natural Gas Well. W. M. Welch. An interesting account of this well, the manner of its taking fire, and the task of putting it out. Ills. 5000 w. Pro Age—Jan. 1, 1907. No. 81350.

### New Mexico.

Burro Mountains Copper District. William Rogers Wade. Gives briefly the history of the camp and an account of present operations. Ills. 1200 w. Eng & Min Jour—Aug. 24, 1907. No. 86553.

### Nickel.

The Manufacture of Malleable Nickel. Erwin S. Sperry. An interesting illustrated article giving much information in regard to nickel metallurgy and the production of malleable nickel. 3800 w. Brass Wld—Jan., 1907. No. 81936.

Genetic Relations of Nickel-Copper Ores, with Special Reference to the Deposits at St. Stephen, N. B., and Sohland, Germany. Charles W. Dixon. Briefly reviews the geology of nickel ores in general and discusses the deposits named. Ills. 8200 w. Jour Can Min Inst—1906. No. 83816 N.

### MISCELLANY

### Oil

On the Nickel Deposits of Webster, Western North Carolina. Alfred E. Barlow. The character and composition of the ore, the geological relations, mode of occurrence, and origin are considered. Ills. 8200 w. Jour Can Min Inst—1906. No. 83819 N.

The Atik-Okan Nickeliferous Pyrrhotite Deposits and Their Origin. F. Hille. A description of the physical features, geology, etc. Ills. 6000 w. Jour Can Min Inst—1906. No. 83818 N.

The Occurrence of Nickel in Virginia. Thomas Leonard Watson. Describes in some detail these nickeliferous pyrrhotite deposits at the Lick Fork openings. Maps. 4000 w. Bul Am Inst of Min Engrs—Sept., 1907. No. 87730 C.

On the Microstructure of Nickeliferous Pyrrhotites. William Campbell and C. W. Knight. An interesting metallographic study of nickel ores from widely distant localities, with conclusions. Ills. 5000 w. Ec Geol—June, 1907. No. 86485 D.

See also Open-Cut, under MINING.

### Nitrogen.

A New System for the Fixation of Atmospheric Nitrogen. F. Savorgnan di Brazza. Illustrates and describes a process based upon the property of calcium carbide to fix nitrogen at high temperatures. 1500 w. Sci Am—Oct. 12, 1907. No. 87554.

### Oil.

Production of Petroleum. Reports of development and production in California, Texas, Louisiana, Ohio, Indiana, the mid-continent, and Appalachian fields. 5000 w. Eng & Min Jour—Jan. 5, 1907. No. 81478.

Petroleum and Its Refinement. Prof. Charles E. Munroe. An illustrated account of this product and the methods used for its purification and refinement. 6000 w. Sci Am Sup—May 4, 1907. No. 84083.

New Methods of Deodorizing Petroleum, Shale Oil and Tar Oil (Nouvelles Méthodes de Déodorisation des Pétroles des Huiles de Schistes et des Huiles de Goudron). Joseph Girard. Discussion of the chemical composition of oils, and description of indirect and direct methods of deodorization. Serial. 1st part. 3000 w. Génie Civil—Dec. 15, 1906. No. 81140 D.

Proposed Long Rifled Pipe Line for California Oil. Describes a new line, 256 miles long, extending from Delano to Porta Costa. Diagram. 1000 w. R R Gaz—June 7, 1907. No. 84806.

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## Oil

ing of petroleum experts and chemists, and the progress of the industry, especially in Roumania. Ills. 2200 w. Eng & Min Jour—Oct. 26, 1907. No. 87896.

Petroleum in Southwestern Fields. Holland S. Reavis. The production and present conditions in Texas and Louisiana are discussed. 4800 w. Mfrs Rec—Jan. 3, 1907. No. 81410.

Petroleum in Illinois. H. Foster Bain. Describes the characteristics of these oil fields in southeastern Illinois. 1200 w. Eng & Min Jour—April 20, 1907. No. 83842.

Sketch of the Oil Fields of Colorado. Arthur Lakes. Reviews the oil possibilities in Colorado, giving information in regard to the productive fields, the quality of the oil, and the future outlook. 1400 w. Min Wld—June 1, 1907. No. 84720.

Oil Field on Buffalo Creek, West Virginia. Frank W. Brady. Information in regard to the location of wells, methods and production. Ills. 2700 w. Mines & Min—Nov., 1907. No. 87851 C.

The New Tilbury and Romney Oil Fields of Kent County, Ontario. Eugene Coste. Information in regard to the oil and gas wells of this district, with description of the geology. 2500 w. Can Min Jour—July 15, 1907. No. 85785.

Oil in the State of Vera Cruz. Ezequiel Ordonez. Describes the conditions prevailing in this part of Mexico, and shows that they extend over quite a zone of the Gulf-coast lands. Ills. 2000 w. Min & Sci Pr—Aug. 24, 1907. No. 86656.

New Russian Oilfields: The Northern Caucasus and the Petchora Basin. Reports rich oilfields in the Kubansky Oblast. 1500 w. Min Jour—June 18, 1907. No. 85109 A.

Economic and Technical Notes on the Wietze Petroleum District (Wirtschaftliche und Technische Mitteilungen über den Wietzer Erdölbezirk). Herr. Dobblestein. Describes the oil-wells, methods, etc., and gives statistics of production of this most important oil district in Germany. Ills. 3500 w. Glückauf—Sept. 7, 1907. No. 87623 D.

See also Drilling, under MINING; and Oil Industry, under INDUSTRIAL ECONOMY.

## Ore Deposits.

The Genesis of Mineral Waters. Etienne A. Ritter. A summary of a paper by Armand Gautier in *Annales des Mines*, discussing their relations to volcanic action and the formation of ore de-

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posits. 2200 w. Eng & Min Jour—Nov. 10, 1906. No. 80368.

The Interaction Between Minerals and Water Solutions, with Special Reference to Geologic Phenomena. Eugene C. Sullivan. Describes work undertaken in the chemical laboratory of the U. S. Geol. Survey, in an attempt to apply chemical methods to the investigations of geologic processes, especially of the secondary deposition of ores. 4000 w. Min Jour—Sept. 21, 1907. Serial. 1st part. No. 87340 A.

Magmatic Waters. Hiram W. Hixon. Discusses the origin and effects of the waters discharged by hot springs, geysers, and volcanoes. 3500 w. Min Jour—Jan. 5, 1907. No. 81645 A.

Magmatic Emanations. Francis Church Lincoln. A statement of what is known in regard to these emanations and their bearing on ore deposits. 4000 w. Ec Geol—April, 1907. No. 85187 D.

The Blow-out. F. Lynwood Garrison. Illustrates and describes interesting geological formations of this character in Arizona and Nevada. 800 w. Min & Sci Pr—Sept. 28, 1907. No. 87412.

About Mineral Belts. Theo. F. Van Wagenen. Calling attention to the metal-producing belts, running parallel with each other, and conclusions drawn. 1700 w. Min & Sci Pr—Oct. 27, 1906. No. 80240.

Microscopic Examination of Nickeliferous Pyrrhotites. William Campbell and C. W. Knight. Gives results of a study made to settle a much discussed question in ore deposition. Ills. 3000 w. Eng & Min Jour—Nov. 17, 1906. No. 80438.

The Direction of Movement and the Nomenclature of Faults. Frederick Leslie Ransome. Calls attention to a kind of dislocation that has received but slight consideration, and discusses the terms normal and reverse as applied to faults. 3000 w. Ec Geol—Sept., 1906. No. 80859 D.

The Relation of Ore-Deposition to Physical Conditions. Waldemar Lindgren. Aims to trace, in a general way, the relations of certain well-known mineral groupings to the physical conditions which there is reason to assume existed during their genesis. 6000 w. Ec Geol—March, 1907. No. 83340 D.

Effect of Wall Rock on the Deposition of Ore. G. W. Miller. Observations on the geology of the metal-bearing veins of Silver Mountain and vicinity in the San Juan region of Colorado. 1700 w. Ores & Metals—May 20, 1907. No. 84452.

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Some Relations of Paleogeography to Ore Deposition in the Mississippi Valley. H. Foster Bain. A study of the relations of sedimentation to ore deposition, especially in connection with the lead and zinc deposits. 5500 w. *Ec Geol*—March, 1907. No. 83341 D.

Fissures and Their Filling, Veins and Shoots. Etienne A. Ritter. Explains conditions that give rise to the segregation of metalliferous ores in deposits that may be mined at a profit. 1000 w. *Ores & Metals*—Jan. 5, 1907. No. 81623.

The Formation and Enrichment of Ore-Bearing Veins. George J. Bancroft. The relationship between "porphyry" and ore is discussed and the views of the writer explained in detail. 8000 w. *Bul Am Inst of Min Engrs*—May, 1907. No. 85273 C.

Mutual Displacement by Intersecting Veins. Walter Harvey Weed. Illustrations showing peculiar seams which may explain faulting on a larger scale. 600 w. *Eng & Min Jour*—June 15, 1907. No. 85052.

The Vein-System of the Standard Mine, Bodie, Cal. R. Gilman Brown. Illustrates and describes a very interesting vein-system, within an area of 1,000 ft. by 4,000 ft., having eight or nine successive sets of fissures, five of which are ore-bearing. 4800 w. *Bul Am Inst of Min Engrs*—July, 1907. No. 85923 C.

The Ore Deposits of the Schneeberg near Sterzing in the Tyrol (Ein Beitrag zur Kenntnis der Tektonik der Erzlagerrstätten am Schneeberg bei Sterzing in Tyrol). B. Granigg. A contribution to the theory of ore deposits. The first part describes the complex vein system of this Austrian district. Ills. Map. 4000 w. *Serial. 1st part. Oest Zeitschr f Berg u Hüttenwesen*—July 6, 1907. No. 86247 D.

The Genesis of Ores. Horace V. Winchell. Commencement address delivered before the Montana School of Mines. Outlines the prevalent modern theories of the genesis of ore deposits, and calls attention to influences and conditions which have a decided bearing upon ore formation. 4800 w. *Min & Sci Pr*—July 13, 1907. No. 85835.

Genesis of the Ores of Leadville. S. F. Emmons. Abstracted from *Bul. of the U. S. Geol. Surv.* A study of geological formation and the ore deposits of this region. 5500 w. *Min & Sci Pr*—Sept. 28, 1907. No. 87411.

Dikes. James F. Kemp. Illustrated description of dikes, giving much information concerning them. 3500 w. *Min & Sci Pr*—Jan. 19, 1907. No. 81919.

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## Platinum

Relation of Eruptive Rocks to Ore Deposits. Etienne A. Ritter. Considers primary segregation due to igneous activity. 1000 w. *Ores & Met*—Dec. 15, 1906. No. 81039.

See also same title, under COPPER.

## Ore Mixing.

The Adjusting of Ores. L. S. Austin. Remarks on schedules of prices and melting charges, sorting and ore manipulation. 700 w. *Eng & Min Jour*—Feb. 2, 1907. No. 82093.

## Phosphates.

The Clarendon Rock Phosphate Deposit, Near Milton, Otago. Arthur Andrew. Describes three deposits, discussing their origin, describing the mining methods and subsequent treatment. 4200 w. *N Z Mines Rec*—Sept. 17, 1906. No. 80339 B.

Phosphate Mining in Tennessee. H. D. Ruhm. An illustrated review of development, and of the present situation and prospects. 3500 w. *Eng & Min Jour*—March 16, 1907. No. 83077.

Phosphate Rock in Utah, Idaho, and Wyoming. Charles Colcock Jones. Describes these deposits. Ills. 2000 w. *Eng & Min Jour*—May 18, 1907. No. 84422.

The Mining of Phosphate in Northern France (Der Abbau der Phosphate in Nordfrankreich). O. Tietze. Illustrated description of the deposits and mining methods. 2000 w. *Glückauf*—May 25, 1907. No. 84961 D.

## Plating.

Gold Plating Steel Belt-Buckles. Describes a method of obtaining good work which is also economical. 800 w. *Brass Wld*—Dec., 1906. No. 81273.

The Care of Nickel Solutions. Points of importance to success in nickel plating are discussed. 1200 w. *Brass Wld*—Dec., 1906. No. 81274.

## Platinum.

Methods of Extracting Platinum. F. W. Horton. Describes the various methods used for the mining and recovery of platinum. 3000 w. *Ind Wld*—Nov. 3, 1906. No. 80222.

Methods of Extraction of Platinum in Russia and the United States. Describes the various methods used for the mining and recovery of platinum. 2000 w. *Min Rept*—Nov. 29, 1906. No. 80786.

Among the Platinum Deposits of the Ural Range. L. Lodian. Reminiscences of travels in the platinum region. 3000 w. *Elec Rev, N Y*—Jan. 5, 1907. No. 81442.

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The Occurrence of Platinum. From the Bul. of the Imp. Inst. Describes platinum minerals, the mode of occurrence, and gives the localities where platinum has been obtained. 2000 w. Can Min Rev—Jan., 1907. No. 81763 B.

Platinum Supply and Demand. E. de Haupick. Information in regard to the production, prices, localities, etc. 1200 w. Min Wld—June 8, 1907. No. 84833.

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The Stassfurt Salt Industry. W. C. Blasdale. Describes the deposits and process of manufacture in operation at a mine in New Stassfurt, Germany. 3000 w. Cal Jour of Tech—Nov., 1906. No. 80412.

The Potash Industry. George Ryce. Abstract of a paper read before the Engng. & Sci. Assn. of Ireland. Remarks on the importance of this industry in Germany, describing the deposits and methods of mining. 3000 w. Min Jour—Jan. 19, 1907. No. 81987 A.

The Two-Shaft System for Prussian Potash Works. Robert Grimshaw. States the advantages claimed for the two-shaft system, and explains the proposed law requiring this system, which is soon to be discussed by a mixed commission. 600 w. Eng & Min Jour—Feb. 2, 1907. No. 82095.

## Pot-Roasting.

The Pot-Roasting of Ore. Leonard S. Austin. Describes this process which is coming into increasing use. Ills. 1200 w. Min & Sci Pr—Oct. 27, 1906. No. 80241.

## Progress.

World's Mining Progress Since Early Times. Charles C. Schnatterbeck. An interesting lengthy review of progress since the discovery of America, and the features of development most important. The various countries are considered separately, their production, methods, minerals and metals, etc. Ills. 30000 w. Min Wld—Jan. 26, 1907. No. 82009.

## Pyrite.

The Oxidation of Pyrite. Alexander N. Winchell. An account of experimental investigations with pure water, charged only with air, to determine the rate of oxidation under favorable conditions. 1300 w. Mines & Min—Sept., 1907. No. 86768 C.

## Radium.

A New Mineral Industry—The Manufacture of Radium. Jacques Boyer. An illustrated outline of the methods used at Nogent-sur-Marne. 1800 w. Engineering Magazine—Nov., 1907. No. 87971 B.

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### Rare Minerals.

The Rare Earth Industry (L'Industria delle Terre Rare). V. Fino. Describes the sources of the substances commonly called the rare earths, their industrial applications and method of treatment. 4000 w. Industria—June 9, 1907. No. 85624 D.

Rare Metals and Minerals and Their Uses. E. Schaaf-Regelman. Interesting information concerning the supply and demand of rare minerals, their use in high-speed tool-machines, tools, incandescent lighting, etc. 3500 w. Engineering Magazine—April, 1907. No. 83317 B.

### Rocky Mountains.

Certain Features of the Rocky Mountain Region. Horace F. Evans. Describes the general features of the Rocky Mountain systems, especially north of the 40th parallel. 1800 w. Min Wld—Oct. 19, 1907. Serial. 1st part. No. 87802.

### Rutile.

Occurrence of Rutile in Virginia. Thomas Leonard Watson. Gives results of field and laboratory study of the occurrence of rutile in the Virginia area. Ills. 2800 w. Ec Geol—July, 1907. No. 87092 D.

### Sakhalin.

The Mineral Resources of the Island of Sakhalin. Reviews the history and the characteristics of the political situation, geographical and geological features and present conditions, discussing the useful mineral deposits and their importance. Ills. 3500 w. Min Jour—Sept. 28, 1907. No. 87517 A.

### Salt Mining.

The Artificial Lixiviation of Rock Salt (Die Künstliche Verlaugung des Haselgebirges). C. Schraml. An illustrated description of a rock-salt mining process, in which the material is mixed with water, which dissolves the salt, and is conducted through pipes to a collecting chamber. Serial. 2 parts. 5000 w. Oest Zeitschr f Berg u Hüttenwesen—Oct. 27, and Nov. 3, 1906. No. 81112 each D.

Salt Mining Near Fleetwood. Fred. J. Thompson. Abstract of a paper and discussion before the Manchester, Eng., Geol. & Min. Soc. A sketch of the history and geology of the rock-salt deposit at Peersall, describing the methods of shaft-sinking and mining, and the Peersall salt-mine. 3000 w. Col Guard—May 24, 1907. No. 84756 A.

### Sands.

See also Austria, under COAL AND COKE.

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## Sodium Nitrate

Sands. Charles H. Warren. Describes the method of investigation of a large number of samples of river and sea sands, or concentrates from such sands, in connection with work of the United States Geological Survey. 7500 w. Tech Qr—Dec., 1906. No. 81773 E.

## Sodium Nitrate.

The Sodium Nitrate Deposits of the Colorado. H. W. Turner. Describes these deposits, reporting examinations made in four localities. Map. 1200 w. Min & Sci Pr—May 18, 1907. No. 84601.

## South Platte Valley.

Topographic Development of Chalk Bluffs and Pawnee Buttes. Junius Henderson. A study of the surface features of South Platte Valley and the relation to underlying deposits of coal, lime, building stone, brick and fire clay, oil and water. Ills. 3000 w. Ores & Metals—April 20, 1907. No. 83856.

## Sulphur.

Sulphur Mining and Refining in Wyoming. L. W. Trumbull. Describes the deposits and the apparatus and methods used in handling and preparing for market. Ill. 1600 w. Mines & Min—Feb., 1907. No. 82114 C.

The Wonderful Sulphur Mines of Louisiana. Illustrated description of remarkable deposits near the coast of the Gulf of Mexico, and the interesting methods adopted for the recovery. 1600 w. Sci Am—June 1, 1907. No. 84674.

Determination of Sulphur in Pyrite. Henry Fay. Describes the methods of Lunge, and of Fresenius, with notes. 2200 w. Tech Qr—March, 1907. No. 84472 E.

## Talc.

The Talc Industry of the United States. Joseph Hyde Pratt. Describes the late deposits of various localities, and gives the principal uses made of the product. 1500 w. Min Wld—Dec. 29, 1906. No. 81326.

## Tantalum.

Tantalum. Abstract translation of an article by Paul Nicolardat in *Revue Scientifique*, on the properties of this metal. 2000 w. Sci Am Sup—Oct. 5, 1907. No. 87478.

## Tin.

The York Tin Region of Alaska. Frank L. Hess. An account of the geology, topography, ore deposits and working mines of the region, with a forecast of the future output. From an official examination just made for the U. S. G. S. by the

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writer. 5500 w. Engineering Magazine—Dec., 1906. No. 80695 B.

Geology and Mining of the Tin-Deposits of Cape Prince of Wales, Alaska. Albert Hill Fay. An illustrated description of geographic and climatic conditions and of the geology and mining prospects. 4000 w. Bul Am Inst of Min Engrs—Sept., 1907. No. 87728 C.

The Tin Deposits of the Carolinas. Abstract of a bulletin, prepared by L. C. Graton, concerning the location and production of these mines, the size, extent, and economic importance of the deposits. 1300 w. Ir Age—Nov. 1, 1906. No. 80156.

Tin in the Black Hills, South Dakota. Franklin R. Carpenter. The writer believes that tin-mining in this district will soon rank second to gold mining, and gives his reasons for the opinion. 2500 w. Min Wld—Nov. 17, 1906. No. 80459.

A Tin Deposit Near Spokane. A. R. Whitman. An account of a seemingly rich deposit almost in the suburbs of this mining city. 1800 w. Min & Sci Pr—June 1, 1907. No. 84769.

A Tin Deposit Near Spokane. A. R. Whitman. Brief note giving information bearing on the economic importance of this deposit. 600 w. Min & Sci Pr—July 13, 1907. No. 85833.

The Tin Deposits of Mexico. H. G. Bretherton. Describes the Paso de Sotos district. 1000 w. Min Wld—Oct. 26, 1907. No. 87941.

Cornish Tin Mining. H. E. West. Remarks on the recent revival in tin-mining, reviewing past and present equipment of Cornish mines. Ills. 2000 w. Min & Sci Pr—Feb. 9, 1907. No. 82443.

Revival of the Mining Industry in Cornwall. Edward Walker. An illustrated article explaining the geology and mineral deposits, and giving an account of modern methods which may restore abandoned properties to the list of producers. 4000 w. Eng & Min Jour—March 9, 1907. No. 82815.

The Tin-Mining Industry of Cornwall. Illustrated description of the mining and treatment of the ore, the revival of the industry, and improved methods. 2200 w. Sci Am Sup—May 4, 1907. No. 84082.

The Tin-Stream Works of Red River, Cornwall. Edward Walker. Explains the treatment of tailings over and over again by twelve to twenty operators. Ills. 1200 w. Eng & Min Jour—May 25, 1907. No. 84571.

Revival of the South Crofty Tin Mines, Cornwall. Edward Walker. An illustrated account of reorganization. A num-

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ber of small mines will be worked by one corporation, introducing new equipment and new methods. 1000 w. Eng & Min Jour—June 8, 1907. No. 84838.

The Annan River Tinfeld. Walter E. Cameron. An illustrated description of the general features, geology, deposits, and mining. 4200 w. Queens Gov Min Jour—Oct. 15, 1906. Serial. 1st part. No. 80920 B.

Tin in Northern Territory. Information from the report of the Government Geologist, concerning these tinfelds of Australia. 2800 w. Aust Min Stand—Oct. 17, 1906. No. 80802 B.

Tingha Tin Dredging Industry (N. S. W.). P. J. Thibault. Introduction to articles dealing with the tin dredging plants in operation on this field. 1200 w. Aust Min Stand—Aug. 7, 1907. Serial. 1st part. No. 87099 B.

Tin Smelting at Banka. J. Koomans. A short description of the smelting and refining. 1500 w. Min Jour—March 23, 1907. Serial. 1st part. No. 83421 A.

The Tasmanian Tin Industry. Ralph Stokes. An illustrated article describing the deposits, and the geological and industrial features of interest. 2200 w. Min Wld—June 8, 1907. Serial. 1st part. No. 84831.

The Bischoff Tin Mining Co. James Lewis. A report on the possibility of reducing working costs without reducing the proportion of tin saved. 5000 w. Aust Min Stand—May 22 and 29, 1907. Serial. 2 parts. No. 85490 each B.

Mount Bischoff Tin Mine, Tasmania. Ralph Stokes. A report aiming to explain the circumstances leading to the recent partial collapse and to give a description of the natural conditions and working methods. Ills. 3300 w. Min Wld—July 13, 1907. No. 85552.

Alluvial Tinstone Deposits of Northern Nigeria. Describes the deposits and the washing and smelting methods used by the natives. 1500 w. Min Jour—Aug. 17, 1907. No. 86597 A.

Tin Mining in Siam. K. Van Dort. An illustrated account of the methods of mining and working. 3000 w. Eng & Min Jour—Oct. 19, 1907. No. 87792.

Tin Mining in Ulu Selangor, Federated Malay States. E. Nightingale. Describes the geological features and methods of mining. 2000 w. Inst of Min & Met, Bul 34—July 18, 1907. No. 86497 N.

A Review of the World's Tin-Mining Industries. A. Selwyn-Brown. Information relating to the production, sources, mining conditions and prospects. 4000 w.

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Engineering Magazine—Nov., 1907. No. 87973 B.

Cornish Methods of Crushing and Ore Dressing. Edward Walker. A discussion of old and new methods in the dressing of tin ore, and the apparatus used. Ills. 3000 w. Eng & Min Jour—April 13, 1907. No. 83715.

Tin Ore Dressing Plant, East Pool, Cornwall. Edward Walker. Illustrates and describes the reconstructed Tolvadden ore-dressing plant where tin oxide, wolframite, arsenical and copper pyrites are separated by stamps, concentrating tables, calciners and magnetic separators. 1500 w. Eng & Min Jour—May 18, 1907. No. 84419.

Tin Ore Dressing. J. B. Hill and D. A. MacAlister. Illustrates and describes the more important appliances actually in use in the mines of the Camborne district in West Cornwall, England. 1200 w. Min Wld—May 11, 1907. Serial. 1st part. No. 84309.

Recent Progress in the Metallurgy of Tin, with Regard to Electrochemistry in 1906 (Fortschritte und Neuerungen in Der Metallurgie Des Zinns, Speziell in Elektrochemischer Hinsicht im Jahre 1906). H. Mennicke. Review of recent metallurgical processes for the treatment of tin. Serial. 1st part. 2400 w. Elektrochemische Zeitschrift—March, 1907. No. 83669 G.

Electrolytic Refining of Tin. Otto Steiner. Explains the theory and the conditions of importance, describing experiments and methods of working. 4000 w. Elec-Chem & Met Ind—Aug., 1907. No. 86341 C.

The Smelting of Tin Slags. L. Parry. Explains the principles underlying the cleaning of tin slags, the recovery of the tin, especially a lead concentration process patented by the writer. 3000 w. Min Jour—April 27, 1907. No. 84250 A.

## Tungsten.

The Panasqueira Tungsten District, Portugal. Wilhelm Preus. Describes the location, mineralization, etc. Map. 800 w. Eng & Min Jour—May 4, 1907. No. 84214.

The Tungsten Deposits of Boulder County, Colo. William E. Greenawalt. Describes an old gold and silver camp which now produces more than 80 per cent. of the tungsten of the United States. 1500 w. Eng & Min Jour—May 18, 1907. No. 84421.

The Rare Minerals: Their Present Industrial Status. Edgar C. Riebe. Discusses principally the tungsten minerals, their uses, and the reasons for their slow

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development in the United States. 1200 w. *Min Wld*—May 4, 1907. No. 84236.

## Turquoise.

Turquoise in the Burro Mountains, New Mexico. Edward R. Zalinski. The geology of the turquoise deposits, the composition, genesis, etc., are considered. Ills. 8000 w. *Ec Geol*—July, 1907. No. 87-091 D.

## Underground Waters.

The Geological Relations of Water in the Graner Lignite Deposits (Die Wasser-verhältnisse des Graner Braunkohlenreviers). Karl Stegl. The first instalment describes the floods which have occurred during the last thirty years in the mines of this Austrian coal field. Ills. 3000 w. Serial. 1st part. *Oest Zeitschr f Berg und Hüttenwesen*—April 13, 1907. No. 84134 D.

## Vanadium.

Vanadium in Peru. Jose J. Bravo. A preliminary report on the vandiferous region of Minasragra. 1200 w. *Min Wld*—July 6, 1907. No. 85477.

The Present Source and Uses of Vanadium. J. Kent Smith. Shows its great industrial importance, its effect on steel, and considers the present sources of supply. 1200 w. *Bul Am Inst of Min Engrs*—Sept., 1907. No. 87723 C.

## Volumetric Methods.

On Technical Volumetric Methods in General. V. H. Gottschalk. Read before the W. Assn. of Tech. Chem & Met. Discusses the nature of the chemical reaction employed; the nature of the indicator; dependence on conditions of titration; and proper manipulation of measuring instruments. 5000 w. *Min Jour*—May 18, 1907. No. 84576 A.

## Yukon.

Yukon Mining Laws. J. B. Tyrrell. Presents some of the main provisions of the laws which have been in force for the past eight years, pointing out their advantages and disadvantages in the working of gold-bearing gravel deposits. 3500 w. *Jour Can Min Inst*—1906. No. 83809 N.

## Zinc.

Canadian Zinc Production. Review of the report of the Commissioner appointed to investigate the zinc resources of British Columbia, and their commercial possibilities. 3300 w. *Can Min Rev*—Nov., 1906. No. 80517 B.

Production of Zinc in the United States. From advance sheets of the U. S. Geol. Surv. Gives the estimated pro-

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Production and Consumption of Spelter in 1906. Walter Renton Ingalls. Statistics of production and consumption of spelter and zinc ore. Ills. 3400 w. *Eng & Min Jour*—May 18, 1907. No. 84418.

Dodd City, Ark., Zinc Fields. Illustrated description of this section which promises to become an important producer of lead and zinc. 1200 w. *Min Wld*—Feb. 23, 1907. No. 82565.

Sheet Ground Mining in the Webb City District. Otto Ruhl. Gives information regarding the profitable mining of low-grade zinc ores, and the development of the "sheet-ground" territory. Ills. 1500 w. *Min Rept*—Feb. 7, 1907. No. 82204.

Open-pit Zinc Mine at Webb City, Missouri. F. Lynwood Garrison. Illustrations, with brief description of features of interest. 600 w. *Eng & Min Jour*—Aug. 17, 1907. No. 86427.

Zinc in Eastern Tennessee. W. C. Clark. Describes the location of the deposits, nature of the ores, work done, etc. 1500 w. *Mines & Min*—April, 1907. No. 83397 C.

The Zinc Belt of Claiborne and Union Counties, Tennessee. W. C. Clarke. Describes formations of varying richness which present a promising outlook. 1500 w. *Mines & Min*—July, 1907. No. 85425 C.

The Zinc Industry in Colorado. The present article is a review of the history and production. 1000 w. *Min Rept*—Feb. 28, 1907. Serial. 1st part. No. 82748.

The Treatment of Zinc Ores in Colorado. F. W. Traphagen. Briefly discusses the several methods of treatment. 2500 w. *Mines & Min*—Aug., 1907. No. 86094 C.

Zinc Mining in Mississippi Valley. E. Hedburg. Describes the deposits and gives information relating to the earnings from these mines. Ills. 1500 w. *Min Wld*—March 2, 1907. No. 82754.

Lucky Jim Mine, Slocan District. An expert's description of one of the largest zinc mines in British Columbia. 3800 w. *B. C. Min Rec*—Feb., 1907. No. 83786 B.

Broken Hill Zinc Field, New South Wales. Ralph Stokes. Concerning the treatment by the Delprat process of the tailings from the Barrier ores, which are rich in zinc. Also the treatment of old tailings at the Central Mine by the magnetic method. Ills. 1500 w. *Min Wld*—May 4, 1907. No. 84233.



# MINING AND METALLURGY

## Zinc

The Valuation of Roasted Blend with Regard to Its Sulphur Content. V. Hassreidter-Trooz. Abstracted from *Zeit. f. angew. Chemie*. Gives table showing results of analyses of ten different blends roasted in six plants, discussing the results. 800 w. *Eng & Min Jour*—April 13, 1907. No. 83714.

Design of a Zinc Smelter. Reprint of Mr. Ingalls' views as given in the report of the British Columbia commission. Considers the technical and economical features of the plant. 3500 w. *Ores & Metals*—March 20, 1907. No. 83233.

Cost of Smelting. W. R. Ingalls. Report of the British Columbia Zinc Commission. Outlines the fundamental principles which determine the total cost of smelting, and gives estimates of cost of smelting in Europe and America. 2200 w. *Min Rept*—Jan. 17, 1907. No. 81710.

German Smelting Regulations. Gives regulations pertaining especially to zinc smelters. 1200 w. *Min Rept*—Oct. 17, 1907. No. 87798.

The Zinc Smelting Works of Swansea, Wales. Edward Walker. An illustrated description of six smelters which produce about 450 tons a week, mostly from custom ores and partly from ores imported from Italy and Africa. 1200 w. *Eng & Min Jour*—July 27, 1907. No. 85954.

See also Silver-Zinc, under GOLD AND SILVER; and British Columbia, under MINING.

## Zinc Alloys.

Alloys of Zinc and Iron (Les Alliages de Zinc et de Fer). S. Wologdine. Description of experiments on alloys containing less than 10 per cent. of iron, crystal formation observed, and melting points. Ills. 2400 w. *Revue De Metallurgie*—Dec., 1906. No. 82310 H.

## Zinc Analysis.

A Study of the Ferrocyanide Method for the Determination of Zinc. W. H. Seamon, in *West. Chem. & Met.* A study of the conditions influencing the determination. 2500 w. *Min Rept*—April 11, 1907. No. 83722.

The Ferrocyanide Method for the Determination of Zinc. W. H. Seamon. A study of the conditions that influence the determination. 1800 w. *Min Wld*—Nov. 3, 1906. No. 80242.

The Gravimetric Estimation of Zinc. Charles E. Reuger. Describes in detail the phosphate method which is highly accurate. 1500 w. *Min Wld*—Dec. 29, 1906. No. 81325.

Technical Estimation of Zinc. Charles

## MISCELLANY

E. Rueger. Gives methods for attaining more exact results in zinc analysis. 2000 w. *Mines & Min*—Nov., 1906. No. 80195 C.

Laboratory of the Coffeyville Zinc Works. E. W. Buskett. Illustrated description of laboratory equipment. 1000 w. *Eng & Min Jour*—Sept. 21, 1907. No. 87163.

## Zinc Dross.

Zinc Dross and Its Refining. Describes the character of this material and the method of reclaiming the zinc. Ills. 1000 w. *Brass Wld*—Dec., 1906. No. 81272.

## Zinc-Lead.

Lead and Spelter Production. A review of developments in the lead and zinc industries in 1906, with statistics of production. 8000 w. *Eng & Min Jour*—Jan. 5, 1907. No. 81472.

Missouri's Great Zinc and Lead Mines. S. F. B. Morse. Reviews the development of this district, the deposits, mining, the uses made of these metals, etc. 3000 w. *Mfrs Rec*—Jan. 3, 1907. No. 81408.

The Kelly Mine, New Mexico, and Treatment of Its Ores. Woolsey McA. Johnson. An illustrated article describing the geology of the deposits of zinc-lead, their mining, concentration, etc. 2000 w. *Min Wld*—Aug. 17, 1907. No. 86444.

Lead and Zinc Mining. W. R. Crane. A description of the occurrences of ore and methods of mining and milling in the Quapaw district, Oklahoma. 2500 w. *Mines and Min*—May, 1907. No. 84063 C.

Wisconsin Zinc and Lead Deposits. Albert A. Hoskin. States the writer's hypothesis for explaining these deposits, discussing its special features. 3500 w. *Min Rept*—Nov. 29, 1906. No. 80785.

Zinc and Lead Deposits in the Wisconsin Field. Albert A. Hoskin. Considers these deposits and their origin, the relation between surface and underground ranges, and facts supporting the hypothesis of deposition from above. 3000 w. *Min Rept*—Dec. 6, 1906. Serial 1st part. No. 80892.

The Lead and Zinc Fields of Southwestern Wisconsin. George E. Edwards. Describes this district lying in Iowa, Illinois, and Wisconsin, and the deposits of lead and zinc, methods of mining, etc. 2500 w. *Min Wld*—Aug. 17, 1907. No. 86447.

Mining in Ainsworth Camp, West Kootenay. From Report of British Columbia Zinc Commission. Describes the property of the Highlander Mill and Min-

# MINING AND METALLURGY

## Zinc-Lead

ing Co. The ores are said to average 67 per cent lead, 4 per cent zinc, and 22 ounces silver. 2000 w. *Min Rept*—Jan. 17, 1907. No. 81712.

New Plants in the Clausthal District (Die Neuanlagen der Königlichen Berginspektion zu Clausthal). Herr Schennen. An illustrated description of recent extensions in mining and ore-dressing plants and of mixing and milling methods in this important galena-zincblende district in Germany. 7000 w. *Glückauf*—June 1, 1907. No. 85629 D.

Recent Improvements at the Clausthal Mines. Bergrat Schennen. Trans. from *Glückauf*. The improvements relate to mining, ore dressing, and power generating. Ills. 2000 w. *Min Jour*—June 22, 1907. Serial. 1st part. No. 85394 A.

Mining and Smelting at Granby, Missouri. Edwin T. Perkins. Describes the geology and deposits of this zinc-lead district; how the ores are mined, treated and smelted and the mines developed. 2500 w. *Eng & Min Jour*—Aug. 31, 1907. No. 86683.

See also Concentration and Joplin District, under MINING.

## Zinc-Lead Pigments.

Zinc-Lead Pigment Plant of United States Smelting Company, Canon City, Colorado. Pierce Barker. Brief description of a plant for the manufacture of zinc-lead pigment using a modification of the Lewis and Bartlett process. 700 w. *Min & Sci Pr*—Sept. 5, 1907. No. 86798.

## MISCELLANY

### Zinc Milling.

Milling "Sheet Ground" Ore in Joplin District. Doss Brittain. Illustrates and describes the milling system in general, and some of the large mills. 3000 w. *Eng & Min Jour*—July 13, 1907. No. 85549.

Ore Milling in the Slocan, British Columbia. Philip Argall. From the report of the Zinc Commission of British Columbia. Gives suggestions where the present practice might be improved to save greater values. 2500 w. *Mines & Min*—April, 1907. No. 83399 C.

Differentiation by Leaching in the Wisconsin Zinc Region. H. A. Wheeler. Describes changes in this district by leaching action. 1500 w. *Eng & Min Jour*—Aug. 17, 1907. No. 86430.

See also Concentration, Joplin District and Missouri, under MINING.

### Zinc Ores.

Zinc Ore and Manufactures Therefrom. W. G. Scott. Information concerning the ores of zinc and the uses made of it. 2500 w. *Min Wld*—Sept. 14, 1907. No. 87040.

### Zinc Oxide.

Zinc-Oxide and Zinc-Lead Pigment Manufacture. William F. Gordon. An illustrated article explaining how the process requiring pure zinc ores and anthracite fuel was made suitable for complex ores and the use of soft-coal and for saving the copper, gold and silver. 1400 w. *Eng & Min Jour*—June 1, 1907. No. 84705.

## Zinc Oxide

## RAILWAY ENGINEERING

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### Accidents

### CONDUCTING TRANSPORTATION

### Derailments

#### Accidents.

Government Accident Bulletin, No. 22. The report of the Interstate Commerce Commission for the three months ending Dec. 31, 1906. Also the the Virginia Commission report on the Lawyer collision. 4500 w. R R Gaz—May 24, 1907. No. 84539.

What Can Be Done to Reduce the Number of Railway Accidents? Editorial discussion with opinions from other sources. 4000 w. Eng News—Dec. 6, 1906. No. 80847.

British Practice in Railroad Accident Inquiries and Railroad Inspection. H. A. Yorke. A statement of British practice with review of the Railroad Acts and legislation, and editorial. 3300 w. R R Gaz—April 19, 1907. No. 83828.

See also Collisions, Derailments, and Wrecks, under CONDUCTING TRANSPORTATION.

#### British Practice.

Note on the Operating of Trains and Locomotives in England (Note sur le Service des Trains et des Machines en Angleterre). MM. Demoulin and Bezier. Illustrates and describes cars and locomotives on British railways and discusses points of difference in British and French operating practice. 12000 w. Rev Gen d Chemins d Fer—July, 1907. No. 86208 G.

#### Ceylon.

The Passenger Service on the Ceylon Railways. Messrs. Blum and E. Giese, in *Zeitung des Vereins*. An interesting account of these railways and their equipment and proposed new lines. 2000 w. Bul Int Ry Cong—Nov., 1906. No. 80743 E.

#### Collisions.

Government Investigation of Terra Cotta Collision. Abstract of testimony taken by the Interstate Commerce Commission while investigating this collision in the District of Columbia. 4000 w. R R Gaz—Jan. 11, 1907. No. 81564.

The Elliot Junction Collision. Information from the report on the disastrous rear-end collision in Scotland on Dec. 29, 1906. 2000 w. R R Gaz—July 5, 1907. No. 85468.

#### Communication.

See Telegraphy and Telephony, under ELECTRICAL ENGINEERING; COMMUNICATION.

#### Derailments.

Railway Bridge Floors and the Atlantic City Disaster. Editorials discussing the leaving of the bridge floor without inside guard rails, and the failure to have the signals so connected as to indicate the position of rails. 4000 w. Eng News—Nov. 8, 1906. No. 80334.

The Best Safeguard Against Woodstock Disasters. A. M. Wellington. Reprinted from Eng. News. of Feb. 12, 1887. Describes and illustrates the improved Latimer re-railing bridge safety guard. 700 w. Eng News—Nov. 8, 1906. No. 80336.

Rails and Rail-Lifts on the Thoroughfare Draw Near Atlantic City, N. J., Newfield Branch of West Jersey and Sea-Shore R. R. Illustrated detailed description of the mechanism of this drawbridge, where a train was recently derailed and plunged into the water. 1800 w. Eng News—Nov. 15, 1906. No. 80451.

The Atlantic City Disaster. Report of the decision of the coroner's jury concerning the cause of the derailment on the drawbridge of the West Jersey & Sea-shore, at Atlantic City, N. J., Oct. 28, 1906. 1000 w. R R Gaz—Nov. 9, 1906. No. 80329.

Shrewsbury Railway Accident. An illustrated account of a serious accident in England. 900 w. Engng—Oct. 18, 1907. No. 87960 A.

Report on the Derailment of the "Pennsylvania 18-Hour Special" at Mineral Ties. Gives the report of the investigating committee, with editorial, and an ex-

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## Deraillments

planation of the ordered removal of the steel cross-ties. 2000 w. Eng News—March 7, 1907. No. 82798.

The New York Central Accident Investigation and the Action of Railway Trains on Curves. Editorial discussion of this accident with an outline of facts in connection with railway curve mechanics. 3800 w. Eng News—March 7, 1907. No. 82799.

Some Facts and Figures Bearing on the Bronx Park Derailment on the New York Central. Gives a summary of the three investigations of the accident that have been in progress and of the results. 5000 w. Eng News—March 14, 1907. No. 83139.

The Bronx Park Derailment on the New York Central: Report of the State Railroad Commission. Gives the findings and recommendations of this commission, with comments. 2000 w. Eng News—May 16, 1907. No. 84388.

The Recent Accident on the New York Central and Hudson River Railroad. An illustrated account of the Woodlawn accident, discussing its cause. 3700 w. Engng—April 12, 1907. No. 83880 A.

Wreck of an Electric Train on the New York Central. An illustrated account of this accident and discussion of its cause. 1800 w. Sci Am—March 2, 1907. No. 82644.

Danger to High Speed Trains on Curves. Richard T. Dana. Gives the results of a theoretical investigation of the general problem inspired by the recent accident on the New York Central R. R. 1500 w. Engng-Con—March 27, 1907. No. 83274.

Curve Mechanics and the Woodlawn Wreck. T. H. Brigg. A letter from an English writer offering an explanation of the accident in Feb., 1907. 1200 w. R R Gaz—Aug. 23, 1907. No. 86527.

Derailment on Curves. H. J. Slifer, with discussion. Considers the principal causes of derailment. 4000 w. Pro Iowa Ry Club—Jan. 11, 1907. No. 82267 C.

One Cause of Deraillments. W. R. M'Keen, Jr. Editorial, discussing the proper location of side bearings, together with the amount of vertical clearance between them. 1100 w. R R Gaz—June 14, 1907. No. 85072.

A Possible Cause for Wrecks. H. M. Perry. Discusses deraillments due to excessive loads on side bearings. 1200 w. Ry Mas Mech—June, 1907. No. 84827.

See also Curves, under PERMANENT WAY AND BUILDINGS.

## CONDUCTING TRANSPORTATION

### Engine Loadings.

A Comparison of Cooper's E 50 Loading with Recent Heavy Locomotives. Gives a comparison compiled under the direction of C. F. Loweth, of the Chicago, Milwaukee & St. Paul Railway. 1000 w. Eng Rec—June 15, 1907. No. 85060.

### Facilities.

Necessary Expansion of Railroad Facilities. From an address before the Chamber of Commerce at Syracuse, N. Y. Showing the rapid increase in the commerce of the nation and the need of great increase of facilities, and matters bearing upon railroad operation. 2000 w. Ry & Engng Rev—June 22, 1907. No. 85230.

### Progress.

Progress in Transportation. G. M. Basford. Extracts from an address before the Tech. Pub. Assn., New York. Remarks on the influence of the railroad on civilization, and especially on the development of the United States. 1200 w. Am Engr & R R Jour—April, 1907. No. 83491 C.

### Rules.

Working Regulations for Boston & Maine Enginemen. Gives the new code of rules adopted governing the conditions under which these men are to work. 2700 w. R R Gaz—March 1, 1907. No. 82680.

### Siberia.

Trans-Siberian Ry. Service. From a report by Consul-General Thomas Sammons, of Newchwang, Manchuria, based upon recent personal observations. Information concerning the accommodations and facilities of interest to travelers. 2300 w. Ry & Engng Rev—March 30, 1907. No. 83375.

### Signalling.

The Optics of the Signal Lens. William Churchill. Aims to give optical data of chief interest to the users of signal lenses, and the optical principles upon which the data depend. Ills. 6500 w. Pro Ry Sig Assn—1906. No. 82486 N.

The Upward Indication of the Semaphore Arm. L. R. Clausen. A discussion of the objections to the downward indication for proceed, and the arguments for the upward indication. Ills. 2000 w. Pro Ry Sig Assn—1906. No. 82483 N.

New Signals on the Pennsylvania. Illustrates and describes the signalling equipment recently installed near Philadelphia, embodying the principle of upwardly inclined semaphore blades. Also

# RAILWAY ENGINEERING

## Signalling

## CONDUCTING TRANSPORTATION.

## Signalling

editorial. 4000 w. Ry Age—March 15, 1907. No. 83084.

A New System of Block Signaling on the Pennsylvania R. R. Gives an abstract of a descriptive statement in regard to the new system now in experimental service. Also editorial. Ills. 7000 w. Eng News—May 9, 1907. No. 84292.

Standard Convertible Semaphore Signals of the Belgian State Railways. L. Weissenbruch. Illustrated description of the new semaphores and their use. 7200 w. Bul Int Ry Cong—July, 1907. No. 86492 E.

Upward-Inclination, Three-Position Signals, on the P. B. & W. Photographs, drawings and description of the installation of automatic block signals recently put in service. 2500 w. R R Gaz—March 15, 1907. No. 83063.

Railway Signaling. T. George Wilson. Gives a general outline of what is accomplished by interlocking, the manner in which the work is done, and the construction of a particular type of machine. Ills. 3000 w. Elec Jour—Jan., 1907. Serial. 1st part. No. 81786.

New and Old Signaling Problems. W. H. Elliott. Read before the N. England R. R. Club. Considers some of these problems, offering suggestions. 6000 w. R R Gaz—March 22, 1907. No. 83210.

Railroad Management and Safety Devices. J. C. Irwin. Deals with the main features of signaling practice at the present time, giving a detailed description of an important installation. 5500 w. Jour Fr Inst—April, 1907. No. 83759 D.

Unsettled Questions in Railway Signaling. W. H. Elliott. Abstract of a paper read before the New England Ry. Club. A discussion of questions closely connected with the operation of block-signal systems. 5000 w. Eng News—April 18, 1907. No. 83891.

Government Report on the Block System. Extracts from the last report of the Interstate Commerce Commission, dealing with automatic stops and other appliances not in general use, and those containing conclusions and recommendations of the commission. Also the mileage of railroad worked by the block system. 7000 w. R R Gaz—March 1, 1907. No. 82682.

Report on Block Signals. A review of the report of the interstate commerce commission on "Block Signal Systems and Appliances for the Automatic Control of Railway Trains." 3800 w. Ry Age—March 15, 1907. No. 83083.

Government Report on the Block System. Part of the report sent to Con-

gress Feb. 23, 1907, considering the history, cost, safety, deficiencies, etc. 6500 w. R R Gaz—April 5, 1907. Serial. 1st part. No. 83454.

Railway Safety Appliances in America. A review of the annual report of the Interstate Commerce Commission. 2200 w. Engr, Lond—June 28, 1907. No. 85506 A.

Automatic Electric Block Signalling. Illustrated description of the signal installation for the electrified lines of the Long Island Railroad. 900 w. Ry Age—Nov. 23, 1906. No. 80702.

Automatic Electric Block Signalling—Electrified Lines Long Island Railroad. Illustrated detailed description of the system of automatic block signals with alternating-current track circuits. 1000 w. Elec Ry Rev—Dec., 1906. No. 81048.

Automatic Electric Block Signaling on the Boston & Maine Ry. Illustrated description of the double-blade electric semaphore block signals installed, with extracts from specifications. 2000 w. Eng News—March 7, 1907. No. 82797.

Electric Locking at Electric Interlocking Plants. W. H. Arkenburgh. Gives diagrams and explanation of two systems, with comments. 800 w. Pro Ry Sig Assn—1906. No. 82484 N.

Electric Locking. W. H. Arkenburgh. An illustrated description of the electric locking system and its operation. 4000 w. R R Gaz—May 3, 1907. No. 84076.

Electrically-Operated Points and Signals at Didcot. Illustrated description of an important installation on the Great Western Ry., operated by electricity. 2000 w. Engng—Oct. 26, 1906. Serial. 1st part. No. 80306 A.

The Application of Electricity to the Working of Railway Points and Signals. Luis de Moraes Gomes Ferreira. Read at Engng. Con. of the Inst. of Civ. Engrs. Discussion. 2500 w. Elec Engr, Lond—June 21, 1907. No. 85385 A.

Methods of Remedying the Interference of Foreign Current with Automatic Block Signals. Some of the methods of overcoming the effects proposed by a committee of the Railway Signal Assn. 2500 w. Eng News—Jan. 10, 1907. No. 81555.

The Track Circuit as Installed on Steam Railways. H. G. Brown. Read before the Inst. of Elec. Engrs. A description of the track circuit only, as installed on steam railways, of the method of its operation, and of the laws governing its working. 3500 w. Elec Engr, Lond—Jan. 4, 1907. No. 81636 A.

Substituting Track Circuits for Detector Bars. W. N. Spangler. A detailed dis-

# RAILWAY ENGINEERING

## Signalling

## CONDUCTING TRANSPORTATION

## Track Reversal

cussion of the working of electric switch locking in signalling, the features to be guarded against, etc. With general discussion. Diagrams. 6000 w. Pro Ry Sig Assn—1906. No. 82481 N.

The Adaptability of Electricity in Foggy Weather on Railways. Illustrates and describes electric fogging apparatus and the signalling arrangements. 2500 w. Elec Rev, Lond—Dec. 21, 1906. No. 81335 A.

Block Signals in the Cab of the Locomotive. Illustrated description of a mechanical system for repeating block signals in the cab, which is controlled directly by the regular automatic block signals. 1400 w. Sci Am—July 27, 1907. No. 85892.

A New Signaling Machine System for the Automatic Control of Railroad Trains. Illustrates and describes the invention of Thomas E. Raymond Phillips, recently tested in England, which repeats in the engine cab, the signal of the semaphore, and blows the whistle, as well as gradually applying the brakes. 2000 w. Sci Am—June 15, 1907. No. 85013.

The Charging of Storage Batteries from Alternating Current Circuits. F. B. Corey. Discusses the source of supply of the charging current for batteries used in signalling. Also discussion. Ills. 4500 w. Pro Ry Sig Assn—1906. No. 82480 N.

Dry Battery for Block Signal Wires. U. J. Fry. Read before the Ry. Tel. Supts. Assn. A report of satisfactory service with a great saving in cost. 900 w. R R Gaz—July 5, 1907. No. 85470.

The Power Distant Signal. W. A. D. Short. Considers the best means of control for the distant signal. General discussion. 5200 w. Pro Ry Sig Assn—1906. No. 82482 N.

Signalling at Newcastle-on-Tyne. States the advantages of power signalling and gives a description of the installation at the place named. The system employed is the Westinghouse electro-pneumatic. 3000 w. Eng., Lond—Dec. 7, 1906. No. 81032 A.

Signalling on the East Bengal State Railways. G. K. Rogers. Illustrates and describes the general arrangement and Improved Sykes Block. 700 w. Pro Ry working of MacKenzie and Holland's Sig Assn—1906. No. 82478 N.

Prussian State Railway Signals. W. H. Pockels. Illustrates and describes the signals used. 1000 w. R R Gaz—May 24, 1907. No. 84540.

Wireless Signaling System for Railroads. Drawings and description of a

sectional rail cab and block signal system embodying the invention of Frank W. Prentice. 1500 w. Sci Am Sup—June 29, 1907. No. 85316.

New Top-Mast Motor Signal. Illustrated description of a new two-position electric motor signal, known as M-113, being brought out by the General Electric Co. 1000 w. R R Gaz—July 19, 1907. No. 85780.

Controlled Manual Block System in Use on Single Track Line of the Illinois Central Railroad. W. W. Salmon. Deals with the reasons that led this railway to adopt the system described, the results obtained, and the cost of its installation and maintenance. 3500 w. Ry Age—Feb. 15, 1907. No. 82427.

Course for Apprentices in Signal Engineering. Information relating to the terms of employment of the Union Switch & Signal Co., with editorial comment. 1200 w. Ry & Engng Rev—May 18, 1907. No. 84399.

## Signal Wire.

Railway Signal Specifications for Rubber Insulated Wire. Gives the specifications for rubber-insulated signal wire for 600 volts or less, submitted to the Railway Signal Assn. 900 w. Elec Wld—Nov. 10, 1906. No. 80374.

## Single Track.

Single Track Train Operation on the Wheeling & Lake Erie. Gives an interesting chart showing graphically the extra and regular trains run on Sept. 2, 1906, and giving information. 700 w. R R Gaz—Nov. 23, 1906. No. 80571.

## Supplies.

The True Perspective of the Supply Department. Ernest J. M'Veigh. A brief outline of the duties and requirements of a supply agent. 1500 w. R R Gaz—Dec. 21, 1906. No. 81209.

## Telpherage.

Branch Railways by the Telpherage System. Illustrates and describes a typical telpherage line, explaining its advantages, cheapness of construction and operation, and its solution of the problem of overcrowded freight lines. 1500 w. Sci Am—April 13, 1907. No. 83577.

## Track Reversal.

Reversal of Track Running on the New York Central. An account of recent changes in running of trains and in signaling on the electric lines of the N. Y. C. & H. R. 1200 w. R R Gaz—Aug. 30, 1907. No. 86660.

## RAILWAY ENGINEERING

### Train

### MOTIVE POWER AND EQUIPMENT

### Air Brakes

#### Train.

Metre-Gauge Royal Train for India. Illustrated description of the carriages of a train constructed for the special use of the Prince and Princess of Wales during their recent visit to India. 1000 w. Engng—March 8, 1907. Serial. 1st part. No. 83115 A.

#### Train Service.

Express Train Services of 1906—British and French. Charles Rous-Marten. A review of the service during the year, from the view-point of an engineer. 1200 w. Engr, Lond—Jan. 11, 1907. No. 81754 A.

Longest Non-Stop Run on Great Western Railway. Charles Rous-Marten. An account of a run from Paddington to Fishguard over the new route of the Anglo-Irish mail service. 1500 w. Engr, Lond—Sept. 27, 1907. No. 87530 A.

#### Train Tests.

Apparatus for Testing the Handling of

Passenger Trains. Frank McManamy. Illustrates and describes a machine for automatically recording all the details of a trip, explaining the charts and the working of the machine. 2800 w. Pro St Louis Ry Club—March 8, 1907. No. 83590.

#### Waste of Energy.

The Waste of Energy in Railroad Operation. D. C. Buel. Abstract of a paper presented before Trav. Engrs.' Assn. Calls attention to the channels through which energy is wasted. 2500 w. Ry & Engng Rev—Sept. 7, 1907. No. 86801.

#### Wrecks.

A Disastrous Blast. Map and illustrated account of a blast on May 16, near Lookout Mountain, which wrecked a bridge 600 ft. distant, struck a pile driver 900 ft. distant, killing two men, wrecked a train of 11 freight cars, and did other damage. 500 w. Ry & Engng Rev—Aug. 3, 1907. No. 86119.

## MOTIVE POWER AND EQUIPMENT

#### Accounting.

Railway Records. U. H. Clarke. First of a series of articles on accounting and office records of the motive power department. 3500 w. Ry Mas Mech—March, 1907. Serial. 1st part. No. 82866.

#### Air Brakes.

Air Brakes on Electric Locomotives. Illustrates and describes the method of piping an electric locomotive. 600 w. Ry & Loc Engng—Jan., 1906. No. 81446 C.

Air Brakes on the New York Central Electrical Equipment. Extracts from a paper by S. W. Dudley, read at Columbus, Ohio. Describes the brake equipment and its operation. Diagrams. 3000 w. Ry & Engng Rev—June 1, 1907. No. 84730.

Holding Power of Straight Air. Concerning the capacity of the straight air brake. 800 w. Ry & Loc Engng—Jan., 1907. No. 81445 C.

The Value of Straight Air Brakes. Describes the straight air-brake system, discussing the cost and maintenance, etc. 1400 w. Elec Ry Rev—June 15, 1907. No. 85078.

Recent Development in Air Brake Control Apparatus. F. H. Parke and S. W. Dudley. An illustrated discussion of recent rapid developments and fundamental

changes in the control apparatus and the requirements to be met. 3000 w. R R Gaz—June 9, 1907. Serial. 1st part. No. 84811.

Recent Progress in the Air Brake Art. Robert Burgess. An illustrated paper considering progress in locomotive brake equipment and car brake equipment, followed by general discussion. 11700 w. Pro S & S-W Ry Club—Aug., 1906. No. 80282 E.

Defects of New Brake Equipment. G. W. Kiehlm. Gives suggestions for cleaning and testing feed valves, and related subjects. 1000 w. Ry & Loc Engng—April, 1907. No. 83531 C.

Air Brake Control on Heavy Grades of Trains Composed Exclusively of Fully Loaded 100,000 Lbs. Capacity Cars. T. L. Burton. From a paper read before the Air Brake Assn. Reports tests made which proved the ability of air brakes used exclusively to control a heavy train under severe conditions. 1000 w. R R Gaz—May 24, 1907. No. 84543.

The K Triple in Modern Brake Service. John P. Kelly. Remarks on present requirements of air brakes, with illustrated description of this improved design and its working. Also discussion. 11800 w. Pro Cent Ry Club—Sept. 13, 1907. No. 87864 C.

The M Triple Valve. Illustrated de-

# RAILWAY ENGINEERING

## Air Brakes

scription of this valve as applied in the electrification of the Rochester branch of the Erie Railroad. 1200 w. Ry & Loc Engng—Mar., 1907. No. 82702 C.

The Chapsal-Saillot Compressed Air Brake. States the advantages claimed by this brake, which is illustrated and described. 1500 w. Engng—Dec. 28, 1906. No. 81535 A.

The New Continuous Air Brake (Le nouveau Frein Continu Pneumatique). C. Dantin. Detailed description of the mechanism and working of the Chapsal-Saillot brake. Ill. 2600 w. Génie Civil—Mar. 16, 1907. No. 82970 D.

The Westinghouse Improved High Speed Brake on the Santa Fe. An account of the development of the Westinghouse brake, referring to the various equipments which have been used by the Santa Fe and the dates when they were applied. 3500 w. Ry Age—May 31, 1907. No. 84729.

The Westinghouse Air Brake Company. —Quick-Service Triple Valve. An illustrated description of the features of Type K triple valve, outlining what it is designed to accomplish. 7000 w. Pro Ry Club of Pittsburgh—May, 1907. No. 87711 C.

New Westinghouse Quick-Acting Brake. Illustrates and describes the improved triple valve and its action, reporting tests. 2200 w. Engng—Dec. 7, 1906. No. 81027 A.

Variable Pressure Mechanism for Air Brakes. Illustrates and describes a mechanism operated and controlled by the friction of the shoe with the wheel, varying the shoe pressure without wasting the air pressure. The new brake is called the "Maximus." 1000 w. Sci Am—Aug. 31, 1907. No. 86678.

The Maximus Brake. Illustrated description of a brake designed to give a pressure which shall vary with the speed. 600 w. Engr, Lond—Nov. 9, 1906. No. 80503 A.

The Maximus Brake. Illustrated detailed description of an English invention developed in connection with both the vacuum brake and the Westinghouse, which gives a uniform retarding effect. 1600 w. R R Gaz—Aug. 2, 1907. No. 86108.

The Braking of Trains at High Speed (Le Freinage des Trains à Grande Vitesse). A. Boyer-Guillon. Outlines the theory of braking, the defects of the common type of air brake and describes the mechanism and advantages of the Maximus brake. Ills. Plate. 4000 w. Génie Civil—July 27, 1907. No. 86214 D.

## MOTIVE POWER AND EQUIPMENT

## Brakes

S F 4, Pump Governor. Discusses some of the peculiarities in the operation of this pump governor which is designed to automatically adjust the relation of the brake pipe and the main reservoir pressure. 7000 w. Ry & Loc Engng—May, 1907. No. 84031 C.

See also Brakes, under MOTIVE POWER AND EQUIPMENT.

## Air Pipes.

Broken Air Pipes. G. W. Kiehm. Suggestions for repairing pipes in the air-brake equipment. 1500 w. Ry & Loc Engng—Oct., 1907. No. 87318 C.

## Air Pumps.

Large Pumps and 100-Car Train. Discusses the advisability of adopting larger air-pumps for long trains, showing that a larger pump than the 9½-in. is required for modern service. 1500 w. Ry & Loc Engng—Dec., 1906. No. 80872 C.

## Ash Handling.

The Ash Handling Plant of the Delaware, Lackawanna & Western R. R. at Scranton, Pa. Brief illustrated description of an efficient plant where frequently 300 engines are cleaned in a day. 800 w. Eng Rec—March 16, 1907. No. 83069.

## Bearings.

Axle Bearings for Heavy Tonnage Wagons; Indian Railways. H. Kelway Bamber. Considers difficulties due to increased loads, and the remedies. Discusses the kind of bearings necessary and the lubrication. 1100 w. Engng—Dec. 14, 1906. No. 81245 A.

## Brakes.

The Kapteyn Apparatus for Recording Continuous Brake Trials. A. Fuhr, in *Annalen für Gewerbe und Bauwesen*. Illustrated detailed description of this new apparatus under trial on the Prussian State Railways. 2500 w. Bul Int Ry Cong—Nov., 1906. No. 80741 E.

Practical Views on Brake Rigging. Franklin M. Nicholl. Discusses the most common forms of brake rigging as applied to double-truck equipments. 1200 w. St Ry Jour—Dec. 8, 1906. No. 80903.

Comparison of Brake Systems. (Kritik der Bremssysteme bei elektrisch betriebene Hebezeugen). F. Jordan. The Hebezeug electric brake compared with others. Illus. Serial. 3 parts. 22000 w. Zeitschrift Des Vereines Deutscher Ingenieure—Dec. 15, 22 and 29, 1906. No. 81838 each D.

Mechanical Power Storage Brake. Illustrated description of this solution of



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## Brake-Shoes

the brake problem. 1800 w. Tram & Ry Wld—March 7, 1907. No. 83192 B.

See also Air Brakes, under MOTIVE POWER AND EQUIPMENT.

## Brake-Shoes.

Review of the Master Car Builders Brake-Shoe Tests. A report of interesting tests made during the past twelve years at the Purdue University testing plant. 6000 w. St Ry Jour—Aug. 3, 1907. No. 86084.

## Buffers.

Buffers During Shunting Operations and During the Braking of Long Trains. J. Doyen. Considers methods of calculating what amount of work a buffer must be able to take up in order to satisfy the requirements of actual practice. 1900 w. Bul Int Ry Cong—Dec., 1906. No. 81383 E.

Dimensions of Buffers for Standard Gage Cars (Dimensions à Adopter pour les Disques Tampons de Choc des Véhicules de Chemins de Fer à Vole Normale). M. M. Chabal et Beau. Comprehensive discussion of most efficient size of buffer discs to be used under different conditions. Mathematical treatment. Diagrams. 8800 w. Revue Générale des Chemins De Fer—Jan., 1907. No. 82349 G.

Experiments on the Relative Displacement of the Buffers of Neighboring Cars (Expériences Faites en 1897 à la Cie. Paris-Lyons-Méditerranée sur le Déplacement Transversal Relatif des Tampons Voisins de Deux Véhicules Consécutifs d'un Train). MM. Chabal and Beau. Illustrated account of experiments with trains on curves and on tangents, on the Paris-Lyons-Mediterranean Ry. Diagrams. 3500 w. Rev Gén des Chemins de Fer—Dec., 1906. No. 81130 G.

## Car Cleaning.

Car Cleaning. B. P. Flory. Discusses the subject of terminal car cleaning only, the methods and cleaners. General discussion. Ills. 12000 w. Pro N Y R R Club—Oct. 19, 1906. No. 80404.

## Car Heating.

Heating Systems for Railway Cars. Prof. R. C. Carpenter. An illustrated paper discussing processes and methods of operation. 4000 w. Heat & Vent Mag—March, 1907. No. 83174.

Heating of Trains on the Hermes-Beaumont Railway (Le Chauffage des Trains sur les Lignes Exploitées par la Compagnie du Chemin de Fer de Hermes à Beaumont). Mons. Dupriez. Illustrated description of system of heating by steam from the locomotive, on meter-gauge

## MOTIVE POWER AND EQUIPMENT

## Car Repairs

railways in northern central France. 2500 w. Rev Gén des Chemins de Fer—Nov., 1906. No. 80640 G.

Heating Trains by Steam (Nots sur l'Application du Chauffage des Trains par la Vapeur). M. Hallard. Describes the Heintz system in use on the lines of the Chemin de Fer du Midi, the apparatus used and the working of the system. Ill. 2400 w. Rev Gen des Chem de Fer—Feb., 1907. No. 82990 G.

Heating and Ventilating of Cars. E. R. Swan. Read before the Am. Soc. of Heat. & Vent. Engrs. Discusses systems that have been tried and gives an illustrated description of the system designed by the writer for the automatic control of the air supply. 6000 w. Heat & Vent Mag—Aug., 1907. No. 86494.

See also same title, under MECHANICAL ENGINEERING, HEATING AND COOLING.

## Car Lighting.

Car Lighting. Ed. Wilhelm. Principally an explanation of the advantages of Pintsch gas. General discussion. 3000 w. Pro Iowa Ry Club—April 12, 1907. No. 84481 C.

Car Lighting. J. R. Cravath and V. R. Lansingh. Discusses the means of securing good illumination and pleasing effect in the electric lighting of cars. Ills. 1200 w. Elec Wld—Feb. 2, 1907. No. 82130.

Acetylene Car Lighting on the Great Northern. Illustrated description of the individual gas generator for each car, and its application. 1000 w. Ry Age—Nov. 30, 1906. No. 80780.

See also Train Lighting, under MOTIVE POWER AND EQUIPMENT; and Car Lighting, under ELECTRICAL ENGINEERING, LIGHTING.

## Car Repairs.

Freight Car Department. D. T. Taylor. Briefly considers car interchange, inspection, repairs, etc. 3000 w. Pro St Louis Ry Club—July 12, 1907. No. 86005.

Repairs to Steel Freight Cars. J. F. MacEnulty. Read before the New England R. R. Club. Illustrates some wrecked steel cars and discusses the cost of repairs and their care. 1600 w. Ir Trd Rev—March 7, 1907. No. 82786.

Maintenance and Repair of Steel Freight Cars. An illustrated article considering the life of steel cars, their repair, liability to damage, their design, cost, etc., as reported by the Baltimore & Ohio Railroad. 10000 w. Am Engr & R R Jour—May, 1907. No. 84092 C.

Repairs to Steel Freight Cars. J. F.

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## Cars

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## Cars

MacEnulty. Read before the New England R. R. Club. Considers the repairs to steel cars and the cost, illustrating wrecked cars and the damage sustained. 1800 w. R R Gaz—Dec. 7, 1906. No. 80875.

The Cost of Freight Car Repairs. M. K. Barnum. Gives a form, classifying the cost of repairs, aiming to keep a record that will make possible keeping down the cost which has been constantly increasing. 500 w. R R Gaz—June 14, 1907. No. 85075.

## Cars.

Private Car for the Western Union Telegraph Company. An illustrated article describing the special features of this car. 500 w. Ry Mas Mech—Nov., 1906. No. 80373.

Private Car for the Canadian Pacific. Illustrated description of a handsome private car, the "Killarney," for the use of the president of the road. 900 w. R R Gaz—Jan. 18, 1907. No. 81683.

Invalid and Family Compartment Cars for the London & Northwestern. Illustrated detailed description of recently completed cars. 600 w. Ry Age—July 12, 1907. No. 85554.

Steel Passenger Car. Illustrates and describes a sample standard 60 ft. steel coach for the Harriman lines. 500 w. Am Engr & R R Jour—Jan., 1907. No. 81355 C.

Steel Passenger Cars. Illustrated detailed description of the sample all-steel passenger coach built for the Long Island Railroad. 2000 w. Am Engr & R R Jour—Feb., 1907. No. 82071 C.

Steel Passenger Cars. Illustrated description of the all-steel type passenger car for use in suburban service on the N. Y. C. & H. R. R. R. 2500 w. Am Engr & R R Jour—March, 1907. No. 82779 C.

Steel Passenger Cars on the Pennsylvania Railroad. Briefly outlines the development in passenger cars, aiming to increase strength and lessen cost of maintenance, and gives an illustrated description of types of steel cars under construction for the Pennsylvania R. R. 3700 w. Ry Age—June 7, 1907. Serial. 1st part. No. 84829.

Steel Passenger Cars for the Pennsylvania Railroad. Gives illustrated description of the general types of steel passenger equipment adopted, 200 cars having been ordered. 5000 w. R R Gaz—June 14, 1907. No. 85077.

Steel Passenger Equipment. Charles E. Barba and Marvin Singer. The first

of a series of articles aiming to advance methods by which the fundamental laws and principles governing the action of the structural materials, under simple and combined stresses, may be applied to the design of steel passenger equipment so as to secure maximum strength with minimum weight. 3000 w. Am Engr & R R Jour—June, 1907. Serial. 1st part. No. 84784 C.

Steel Coach for the Southern Pacific. Plans and description. 600 w. Ry Age—Jan. 11, 1907. No. 81613.

All-Steel Pullman Sleeping Car. Illustrated description of a car to be exhibited at Jamestown, which is as near all-metal construction as is now practicable. 600 w. R R Gaz—April 19, 1907. No. 83826.

All Steel Passenger Service Cars. Explains the reasons for building steel cars and illustrates and describes the design adopted by the Pennsylvania Railroad. 2800 w. Am Engr & R R Jour—June, 1907. No. 84790 C.

All Steel Passenger Cars. Drawings and description of the general structure of postal cars, and suburban passenger cars. 1400 w. Am Engr & R R Jour—July, 1907. No. 85409 C.

All-Steel Passenger Cars. Illustrates and describes the cars to be operated in the tunnels and subways of the Hudson Companies in New York city and vicinity. 1500 w. Am Engr & R R Jour—Oct., 1907. No. 87418 C.

Combination Parlor, Sleeping and Dining Cars for the Canadian Northern. Illustrated description of the general arrangements and finish of these cars. 500 w. R R Gaz—May 3, 1907. No. 84079.

All-Steel Postal Car. An illustrated description of a car for the Pennsylvania non-combustible postal car ever built. 600 Railroad, said to be the first absolutely w. Am Engr & R R Jour—April, 1907. No. 83490 C.

A New Clearance-Measuring Car for the Baltimore & Ohio R. R. J. H. Milburn. Briefly describes previous methods of measurement and gives illustrated description of a new car for this work. 2500 w. Eng News—June 13, 1907. No. 85023.

Van for Motor Cars. Brief illustrated description of a car used on the Caledonian Ry. for carriage of automobiles. 500 w. Ry & Loc Engng—Nov., 1906. No. 80230 C.

Structural Steel in Freight Car Construction. G. A. Akerlind. Read before the Scandinavian Tech. Soc., in Chicago. Reviews the development and calls atten-

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### Cars

### MOTIVE POWER AND EQUIPMENT

### Cast Steel

tion to strong features, discussing design. Ills. 3500 w. Ry & Engng Rev—June 15, 1907. No. 85086.

Steel Cars from the Middletown Car Works. Illustrates and describes recent designs made by this company. 800 w. Ry Age—Dec. 28, 1906. No. 81322.

35-Ton Steel Underframe Stock and Coke Car. Illustrated detailed description of cars for the A. T., and S. F. Ry. 500 w. Am Engr & R R Jour—Nov., 1906. No. 80267 C.

All-Steel 50-Ton Box Car for the Union Pacific. Photographs, drawings and description. 400 w. R R Gaz—Feb. 22, 1907. No. 82539.

Standard 40-Ton Box Car. Drawings and detailed description of a design for the New York Central lines; 6,000 cars having been ordered. 800 w. Am Engr & R R Jour—March, 1907. No. 82782 C.

All-Steel Box Cars. A. M. Waitt. Gives a warning against the extensive adoption of these cars for all kinds of service in all climates. Calls attention to the enormous heat accumulated in the sides of steel cars in mid-summer, and the injury to many classes of freight carried, and to cattle, and to other disadvantages. 1300 w. Ry Age—April 12, 1907. No. 83726.

All-Steel Box Cars. Illustrates and describes two cars for the Union Pacific R. R., recently finished at the Omaha shops. 1100 w. Am Engr & R R Jour—April, 1907. No. 83486 C.

An 80-Ft. Flat Car Trussed with Steel Cables. Illustrates and describes cars built for the Belgian Lines of the Northern Railway of France for carrying long rails. States the requirements. 700 w. Eng News—June 13, 1907. No. 85026.

75-Ton Steel Flat Car. Brief illustrated description of a car for carrying heavy machinery, castings, etc., built for the Lake Shore & Michigan Southern Railway. 600 w. Am Engr & R R Jour—June, 1907. No. 84787 C.

Steel-Frame 50-Ton Gondola Cars: Wabash Railway. Plans and description of high-capacity cars for coal and freight service in which a very substantial steel underframe is used, with sides, ends and floor of timber. 1200 w. Eng News—June 13, 1907. No. 85024.

Steel, Triple Hopper-Bottom, Self-Clearing Coke Car. Gives illustration, plan, elevation, and sections of new cars for the Pittsburg & Lake Erie R. R. 800 w. Am Engr & R R Jour—Aug., 1907. No. 86050 C.

Composite Hopper Car. Illustrated de-

scription of cars of 85,000 lbs. capacity for the Delaware & Hudson Company. 700 w. Am Engr & RR Jour—May, 1907. No. 84095 C.

Forty-Ton Well Wagon. Illustrated description of a special car for carrying heavy loads of awkward size, in use on the Great Northern Railway of England. 600 w. Ry & Loc Engng—Aug., 1907. No. 86045 C.

Special Service Wagons; Great Central Railway Company. Illustrates and describes types of cars used on this English railway for carrying special forms of goods which are too bulky or awkward in shape, or too heavy for the usual cars. 1200 w. Plate. Engng—Aug. 9, 1907. No. 86469 A.

A Flat Car for the Transport of Rails (Note sur un Wagon Plateforme destine au Transporte des Dails de 15 à 24 mètres de longueur). M. M. Lambert. Gives a general description of this car and illustrates the more important structural details. Ill. 1700 w. Rev Gen des Chem de Fer—Feb., 1907. No. 82991 G.

Refrigerator Cars in France. Illustrates and describes types of cars used by two refrigerator car lines in France, and the shipping of loaded refrigerator cars across the English Channel. 1200 w. Ice & Refrig—Feb., 1907. No. 82123 C.

Ventilating Refrigerator Cars. Illustrates and describes the Garland Ventilator and the principle on which it is based. 1500 w. Ice & Refrig—Oct., 1907. No. 87433 C.

Master Car Builders' Reports. Gives report on tests of M. C. B. couplers, and abstracts of other important reports. Ills. 13500 w. R R Gaz—June 21, 1907. No. 85173.

See also Cast Steel, Inspection Car, Instruction Car, and Milan Exposition, under MOTIVE POWER AND EQUIPMENT.

### Cast Steel.

Experience with Cast Steel Parts on Locomotives of the Northern Railway of France (Essai de Pièces en Acier Moulé par la Compagnie du Chemin de Fer du Nord). Mons. du Bousquet. Brief record of favorable experience, with illustration. 500 w. Rev Gén des Chemins de Fer—Nov., 1906. No. 80638 G.

Steel Castings in Locomotive and Car Construction. J. V. McAdam. Briefly considers what has been accomplished in making intricate steel castings for cars and locomotives, and the changes due to their use. 2200 w. Sib Jour of Engng—Nov., 1906. No. 80415 C.

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## Center of Gravity

## MOTIVE POWER AND EQUIPMENT

## Electrification

### Center of Gravity.

Center of Gravity of a Locomotive—Simple Method of Determining. G. R. Henderson. Describes a simple and practical method. 700 w. *Am Engr & R R Jour*—Nov., 1906. No. 80268 C.

### Compression.

Compression in Locomotive Cylinders and Means for Its Relief. H. G. Manning. Calls attention to compression in locomotive engine cylinders as demonstrated by the St. Louis tests, the means of relief and the benefits. 2500 w. *R R Gaz*—June 7, 1907. No. 84807.

### Connectors.

Automatic Connectors for Air and Steam. Illustrated descriptions of the principal types of connectors for air and steam pipes now in use. 1700 w. *Ry Mas Mech*—June, 1907. No. 84828.

### Corrugated Flues.

Deformation of Corrugated Flues under External Pressure. (Ueber die Abweichung von der kreisrunden Form der Flammrohre mit äusserem Druck). O. Knaudt. Describes failures of corrugated flues in locomotive and marine service. Illus. Serial. 2 parts. 3100 w. *Glaser's Annalen*—Nov. 15 and Dec. 1, 1906. No. 81812 each D.

### Driving Shoes.

Driving Shoes and Wedges. Editorial statement of methods of repair. 1200 w. *Ry & Loc Engng*—Aug., 1907. No. 86047 C.

### Dynamometer Cars.

100,000 Lb. Capacity Dynamometer Car. Illustrated detailed description of a recently completed car for the Pennsylvania Railroad. 4000 w. *Am Engr & R R Jour*—Aug., 1907. No. 86048 C.

New Dynamometer Car for the Pennsylvania Railroad. Illustrated description of the car and its equipment and operation. 2500 w. *Eng News*—Oct. 17, 1907. No. 87741.

North-Eastern Railway Dynamometer Car. Illustrated description of a car for this English road. 1200 w. *Engr, Lond*—Oct. 4, 1907. No. 87596 A.

### Dynamometers.

Portable Traction Dynamometer. E. N. Stacey and O. B. Bjorge. Illustrates and describes a dynamometer designed to measure tractive effort. 800 w. *Engrs' Soc of Univ of Minn—Year Book*, 1907. No. 84628 N.

A New Railway Car Dynamometer. A. H. Emery, Jr. Illustrates and describes

an instrument for recording the pull or push between the locomotive and train. Explains the records made, the general principles of the apparatus, etc. 3500 w. *Am Mach*—Vol. 30, No. 22. Serial. 1st part. No. 84680.

Some New Dynamometers (Circa Alcuni Nuovi Dinamometri). Federico Giordano. The first instalment illustrates and describes several forms of traction dynamometer. Serial. 1st part. 5500 w. *L'Industria*—May 19, 1907. No. 84923 D.

A Recording Machine for Dynamometer Tests on Railway Trains. An illustrated description of the machine and the record made, while in use by the railway department of the International Correspondence Schools. 2000 w. *Eng News*—June 6, 1907. No. 84816.

### Electrification.

The Field for Electricity on Steam Railways. Frederick Darlington. Reviews the progress of electricity as a motive power on railroads, showing its superiority and reliability for certain kinds of work, and also its economy. 3500 w. *Ry Age*—Oct. 18, 1907. No. 87790.

Electric Traction on Railways. Philip Dawson. Considers the various causes which have led to the electrification of railways in the present article. 2500 w. *Elect'n, Lond*—April 19, 1907. Serial. 1st part. No. 83993 A.

The Electrification of Steam Railways from the Operating Point of View. As regards ease of operation and continuity of service considers the third-rail system superior to the single-phase overhead system. 2500 w. *Elect'n, Lond*—March 29, 1907. No. 83548 A.

Electric Traction for Steam Roads (Le Traction Electrique appliquee aux Chemins de Fer). M. N. Mazen. Comprehensive paper on the present state of heavy electric railway practice all over the world. Illus. 2 plates. 9800 w. *Mem de la Société des Ingénieurs Civils de France*—Dec., 1906. No. 82905 E + F.

Electric Traction for Steam Roads (La trazione elettrica sulle ferrovie). Pietro Lanino. Enumeration of most important electric installations on European and American railways. 3000 w. *L'Elettricità*—Jan. 25, 1907. No. 82903 D.

Electrification of Steam Railroads. H. Ward Leonard. Quotes from letter by J. J. Hill which claims the great need of additional tracks, and claims that freight congestion can be relieved by increase of speed and loads. Advocates an International Electric Railway Commission to consider questions of trunk line electrifi-

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cation and solution of traffic congestion 1300 w. *Elec Wld*—March 16, 1907. No. 83128.

The Progress of Electricity on Steam Roads in 1906. Bion J. Arnold. Presidential address. Outlines work accomplished, in progress, and planned for the electrification of terminals and lines, and other great improvements such as the construction of tunnels, building of power stations, etc. 6000 w. *Jour W Soc of Engrs*—Feb., 1907. No. 83183 D.

Electrical Power vs. Steam Power in the Operation of Railroads. E. W. Farnham. Considers this subject, especially as applied to heavy traffic lines, passenger and freight, suburban and interurban lines, and large terminals. General discussion. Ills. 10800 w. *Pro W Ry Club*—Oct. 16, 1906. No. 80403 C.

Steam Locomotive and Electric Operation for Trunk-Line Traffic—A Comparison of Costs and Earnings. F. J. Sprague's discussion of the paper on this subject by Joseph Mayer. 4500 w. *Pro Am Soc of Civ Engrs*—Dec., 1906. No. 81300 E.

The Coming of Electric Locomotives. Albert H. Armstrong. Briefly considers the recent electrification of sections of steam-operated lines, and the ends aimed at in the adoption of electric locomotives. 2200 w. *Jour Worcester Poly Inst*—Jan., 1907. No. 81779 C.

On the Substitution of the Electric Motor for the Steam Locomotive. Lewis B. Stillwell and Henry St. Clair Putnam. The purpose of the paper is to record facts relative to heavy electric traction; to present calculations of costs; to show the importance of standardizing equipment; and to consider whether 25 or 15 cycles per second should be adopted in railway operation by alternating-current motors. 20800 w. *Pro Am Inst of Elec Engrs*—Jan., 1907. No. 83023 D.

On the Substitution of the Electric Motor for the Steam Locomotive. Editorial letter from Lewis B. Stillwell and H. S. Putnam in reply to a letter from G. B. Henderson, discussing features of the author's paper on this subject. 3500 w. *St. Ry Jour*—March 16, 1907. No. 83082.

The Substitution of the Electric Motor for the Steam Locomotive. Harrington Emerson. A criticism of conclusions reached by Mr. Lewis B. Stillwell and Mr. Henry St. Clair Putnam, in a recent paper before the Am. Inst. of Elec. Engrs., giving reasons for dissent. 2000 w. *Ry Age*—March 1, 1907. No. 82704.

Petrol Electric (Mixed Traction) Locomotive on the Belgian State Railways for

Shunting Goods Wagons. Em. Uylborck. An illustrated description of the mixed traction locomotive on the Pieper system. Its principal components are an internal combustion engine, a continuous-current dynamo, and a battery of accumulators. 3000 w. *Bul Int Ry Cong*—April, 1907. No. 84521 E.

Energy Necessary for the Electrical Operation of the Swiss Railways (*L'Energie Nécessaire pour l'Exploitation Electrique des Chemins de Fer Suisses*). Prof. Wyssling. Report to a commission for the study of this question. Tables. Serial. 2 parts. 5500 w. *Bull Tech d l Suisse Romande*—Oct. 25, Nov. 10, 1906. No. 80643 B.

Report of the Commission on the Electrification of the Swiss Railways (*Mitteilungen der Schweizerischen Studien-Kommission für Elektrischen Bahnbetrieb*). Prof. W. Wyssling. An elaborate study of the power required. Tables. Serial. 2 parts. 5000 w. *Schweiz Bauzeitung*—Oct. 20, & 27, 1906. No. 81100 each B.

Reports of the Swiss Commission for Studying the Electrification of the Railways. W. Wyssling. (Abstract.) On the quantity of power required to operate the Swiss railways by means of electric traction. 7600 w. *Bul Int Ry Cong*—Aug., 1907. No. 86850 E.

Electrification of the New York, New Haven & Hartford. E. H. McHenry. A fully illustrated article describing important features of the system. Also short editorial. 9500 w. *R R Gaz*—Aug. 16, 1907. No. 86415.

Heavy Electric Traction on the New York, New Haven & Hartford Railroad. E. H. McHenry. Explains the reasons for the adoption of the 25-cycle, 11,000-volt system, and the expected results, giving an illustrated detailed description of the system. 7000 w. *St Ry Jour*—Aug. 17, 1907. Serial. 1st part. No. 86443.

The Inauguration of the New Haven Railroad Electric Service. An illustrated description of the first application in the United States of single phase traction to an important trunk railroad. The Cos Cob power station, the overhead trolley system, and the electric locomotives are described. 1500 w. *Sci Am*—Aug. 3, 1907. No. 86064.

Middletown-Berlin Electrification of the New York, New Haven & Hartford Railroad Company. An illustrated description of the electrification of a branch line, 9.53 miles in length. 1200 w. *St Ry Jour*—Sept. 21, 1907. No. 87170.

The Installation of Electric Traction on

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the New York Terminal Section of the New Haven Railroad. An introductory explanation with illustrated description of the installation between Woodlawn Junction and Stamford. 11300 w. Eng News—Sept. 5, 1907. No. 86755.

The Overhead Construction on the Electric Division of the New York, New Haven & Hartford R. R. Foster Hannaford. Brief illustrated description of the trolley wires, the cables from which they are suspended and the bridges which suspend the cables. 1600 w. Yale Sci M—April, 1907. No. 83918 C.

Opening of Electric Service on the New York Central and the New Haven Railroads. An illustrated article describing the gradual installation of the electric service, and outlining the leading features of the work. 1600 w. Sci Am—Jan. 19, 1907. No. 81690.

Progress in Electrification of the Rochester Division, Erie R. R. Describes this installation, now approaching completion. 1200 w. Ry & Engng Rev—Dec. 8, 1906. No. 80887.

Electrification of the West Jersey and Seashore Railroad. Illustrated description of the new system put in operation on this branch of the Pennsylvania R. R. The present number deals with the powerhouse and sub stations. 2500 w. Elec Rev, N Y—Nov. 3, 1906. Serial. 1st part. No. 80255.

The Electrical Equipment of the West Jersey & Seashore Branch of the Pennsylvania Railroad. Illustrated detailed description of the equipment of this line, changed from steam to electricity. A third-rail system with low voltage. 7500 w. St Ry Jour—Nov. 10, 1906. No. 80321.

Electrical Equipment of the West Shore. An illustrated account of the equipment of a section of the West Shore R. R., between Ithaca and Syracuse, for electrical operation. 1600 w. Elec Ry Rev—Nov., 1906. No. 80422.

The Electrification of the West Shore Railroad between Utica and Syracuse. An illustrated account of this recently completed work and of the service proposed. 3000 w. Elec Rev, N Y—June 22, 1907. No. 85211.

West Shore Electrification Between Utica and Syracuse. Explains the reasons for the methods adopted in this undertaking, and gives an illustrated detailed description of the electric system, transmission lines, etc. 5000 w. St Ry Jour—June 8, 1907. No. 84842.

See also Steam vs. Electricity, under

MOTIVE POWER AND EQUIPMENT; and Electric Traction and Electrification, under STREET AND ELECTRIC RAILWAYS.

## Fireboxes.

Locomotive Fireboxes with Expansion Side Sheets. Describes the Langbridge firebox, with illustrations and report of their use. Also editorials. 2000 w. Eng News—June 20, 1907. No. 85159.

On Repairing the Tube Plates of Locomotive Fire-Boxes. S. Ragno. On the advantage of such repairs, and the methods used. Ills. 6700 w. Bul Int Ry Cong—July, 1907. No. 86493 E.

Methods of Obtaining Flexibility in Locomotive Fireboxes. Shows the advantage of flexibility and considers methods of securing it. Ills. 2500 w. Boiler Maker—Oct., 1907. No. 87324.

## Fuel.

A Solution of the Oil-Burning Locomotive Problem. Harrington Emerson. Considers the differences between oil and coal burning, and the modifications necessary in oil-burning locomotives, describing the improved oil-burning methods introduced on the Santa Fe System and the results. 3000 w. R R Gaz—June 7, 1907. No. 84801.

The Use of Oil Fuel for Locomotives. Abstract of a committee report to the Trav. Engrs'. Assn. Reviews the history of the use of this fuel in the United States. Ills. 2000 w. Eng News—Jan. 10, 1907. No. 81558.

Combustion of Fuel in Relation to Locomotive Firing. The first of a series of articles presenting scientific facts relating to fuels and the combustion process, showing their relations to the operation of locomotive firing. Ills. 1000 w. Ry Mas Mech—Nov., 1906. Serial. 1st part. No. 80372.

Locomotive Coals. A Jacobsen. An account of results of tests made by the Danish State railways. Ills. 4000 w. Engr, Lond—Oct. 18, 1907. No. 87962 A.

## Grade Assistance.

Cable-Assisted Trains Upon a Scottish Railroad. Brief illustrated description of a novel means of assisting trains up a severe gradient in use at the Cowlairs Incline in Scotland. 600 w. Sci Am Sup—Oct. 5, 1907. No. 87479.

## Historical Address.

Address by the President, T. Hurry Riches. Brief discussion of railway rolling stock, and machinery. Many illustrations. 4000 w. Inst of Mech Engrs—April 25, 1907. No. 84478 N.

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## Inspection Car

### Inspection Car.

Track Inspection Car of the Baltimore & Ohio. Illustrated detailed description of the car, giving a section of the record made. 1800 w. R R Gaz—Nov. 2, 1906. No. 80204.

### Instruction Car.

New Air Brake Instruction Car. Brief illustrated description of a recently completed car for the C. B. & Q. Ry. representing the latest development. 800 w. Ry Mas Mech—April, 1907. No. 83470.

### Locomotive Boilers.

Locomotive Boilers in 1834. Illustrates the type of locomotive used on the Liverpool & Manchester Ry. compared with one of the largest and most powerful modern American locomotives. 1500 w. Boiler Maker—July, 1907. No. 85354.

Locomotive Boilers with Combustion Chambers. Illustrates and describes designs in which this type of boiler was used, reporting their efficiency, and giving general information. 4000 w. Eng News Nov., 1906. No. 80554.

The Expansion Stresses in Locomotive Boilers. F. Douglas Wilkes. Points out the direct cause of leakage, giving his opinion of how the difficulty may be overcome, or to a great extent lessened. Ills. 1500 w. Boiler Maker—July, 1907. No. 85357.

Manganese Bronze Staybolts. M. Rodrigue. Trans. from *Revue Generale des Chemins de Fer*. Report of tests showing that manganese bronze is superior to copper for staybolts used in high-pressure locomotive boilers. 500 w. R R Gaz—Aug. 9, 1907. No. 86194.

Modern Method of Washing Locomotive Boilers. E. J. Harris. Describes the Miller system and the improvements introduced by D. W. Cunningham. 1600 w. Pro Iowa Ry Club—June 14, 1907. No. 87226 C.

Effect of Scale on the Transmission of Heat Through Locomotive Boiler Tubes. Edward C. Schmidt and John M. Snodgrass. Reports four series of tests to determine the relative conductivities for heat of clean and scale-covered locomotive boiler heating surfaces. 3800 w. Bul Univ of Ill—April 1, 1907. No. 85822 N.

New York Laws for Locomotive Boiler Inspection. Laws requiring thorough inspection to be made of all boilers and fittings of steam locomotives used on railroads. 2500 w. Boiler Maker—Oct., 1907. No. 87323.

Locomotive Boiler Inspections in New York State. Gives the amended require-

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ments that went into effect Sept. 1st, with the regulations for inspecting, testing, etc. 3000 w. R R Gaz—Sept. 13, 1907. No. 87907.

Causes of Leaks in Locomotive Boiler Tubes. M. E. Wells. Abstract of a paper presented at convention of the Am. Ry. Mas. Mechs.' Assn. Gives a résumé of reported causes and suggested remedies. 1500 w. Eng News—Aug. 29, 1907. No. 86633.

### Locomotive Design.

Curiosities of Locomotive Design. From Development of the Locomotive Engine, by Angus Sinclair. Illustrates and describes some odd inventions in this field. 1800 w. Ry & Loc Engng—Sept., 1907. No. 86704 C.

### Locomotive Failures.

Engine Failures and Their Causes. F. P. Roesch, at Chicago meeting of the Trav. Engrs' Assn. Discusses the construction, repairs, and handling of engines. Ills. 2000 w. Ry & Loc Engng—Nov., 1906. No. 80228 C.

Engine Failures and Their Report. A paper by W. E. Dunham, introductory to an extended discussion. Ills. 17800 w. Pro W Ry Club—Jan. 15, 1907. No. 82489 C.

### Locomotive Lubrication.

Recommendations as to Practice in Locomotive Lubrication. Report of committee at the convention of the Ry. Mas. Mechs.' Assn. 800 w. Eng News—June 20, 1907. No. 85157.

### Locomotive Performance.

Ton-Mile-Per-Hour. G. H. Windsor. Discusses the question of fair rating of locomotive performance. Ill. 1200 w. Ry & Loc Engng—June, 1907. No. 84774 C.

Recent Locomotive Work on the French Northern Railway. Charles Rous-Marten. An account of runs showing the ordinary work on this railway. 3000 w. Engr, Lond—Sept. 20, 1907. No. 87346 A.

### Locomotive Repairs.

Dispatching Board for Engine Repairs. C. J. Morrison. Describes a board used in the Topeka shops to aid the general foreman in keeping an account of the condition of the work. 600 w. Am Engr & R R Jour—April, 1907. No. 83487 C.

### Locomotives.

Locomotives at the Liège Exposition in 1905 (Les Locomotives à l'Exposition de Liège, 1905). A. Herdner, with note by A. Mallet. Very complete, illustrated re-

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view of the steam locomotives at Liège, and their parts and operation. 4 plates. 40000 w. Mem Soc Ing Civ de France—Sept., 1906. No. 80633 G.

The Development of the Bavarian Locomotive and its Representatives at the Nürnberg Exhibition, 1906 (Die Entwicklung des Bayerischen Locomotivbaues und dessen Erzeugnisse auf der Jubiläums- und Landesausstellung in Nürnberg, 1906). Julius Weil. A historical review and a description of recent productions. 1800 w. Serial. 1st part. Elektrotech u Polytech Rundschau—Aug. 28, 1907. No. 86965 D.

Locomotives at the Jamestown Exposition. Illustrated description of the exhibits of the Baldwin Locomotive Works and the American Locomotive Company. 1500 w. Ry Age—Oct. 4, 1907. No. 87494.

Narrow-Gauge Locomotives at the Milan Exhibition. A narrow-gauge, eight-wheel coupled engine, fitted with Schmidt superheater is illustrated and described. 500 w. Engng—Nov. 9, 1906. No. 80498 A.

Balance Compound Prairie Type Locomotive with Inclined High Pressure Cylinders. Engines for fast freight service on the A., T. & S. F. Ry are described and illustrated. 1200 w. Am Engr & R R Jour—Nov., 1906. No. 80270 C.

Birmingham Southern 2-8-0. Illustration, with description, of engines for use on a road in Georgia. 500 w. Ry & Loc Engng—Nov., 1906. No. 80227 C.

Cole Four-Cylinder Balanced Compound Pacific Type Locomotive. Illustrated description of engines for the Northern Pacific Ry. They are the heaviest of the type ever built. 1800 w. Am Engr & R R Jour—Nov., 1906. No. 80266 C.

Culm Burner for the D. & H. Illustrated description of consolidation locomotives designed for slow-freight and pushing service. 800 w. Ry & Loc Engng—Nov., 1906. No. 80229 C.

Four-Cylinder Compound Six-Coupled Locomotive for the Austrian State Railways. Brief illustrated description. Plate. 400 w. Engng—Nov. 16, 1906. No. 80729 A.

Four-Cylinder Compound Ten-Coupled Locomotive; Milan Exhibition. Illustrated detailed description. Plate. 1000 w. Engng—Oct. 26, 1906. No. 80308 A.

Heavy Mogul Locomotive for the Vandalia. Illustrated description of the heaviest mogul (2-6-0) locomotives yet built. In working order they weigh 187,000 pounds each. 500 w. Ry Age—Nov. 16, 1906. No. 80461.

Locomotive Development on British Railways. The first of a series of critical articles on modern practice in locomotive development. 2000 w. Engr, Lond—Nov. 16, 1906. Serial. 1st part. No. 80732 A.

New Designs of Locomotives. Illustrates and describes two recent locomotives built in England; one of 4-6-0 type, the other 4-4-0 type. 1000 w. Mech Engr—Nov. 10, 1906. No. 80473 A.

Mogul Locomotives for the Philippine Railway. Illustrated description of narrow gauge (3 ft. 6 in.) engines intended for mixed passenger and freight service. 600 w. Ry Age—Nov. 16, 1906. No. 80462.

Balanced Compound for the N. P. Illustrated detailed description of a 4-6-2 passenger engine of the Pacific type built with four-cylinders in the form of a balanced compound. 1000 w. Ry & Loc Engng—Dec., 1906. No. 80870 C.

Baldwin Balanced Compound. Illustrated description of a four-cylinder balanced compound of the 2-6-2 type for fast freight service. 600 w. Ry & Loc Engng—Dec., 1906. No. 80873 C.

Compound Locomotive for the Kansei Railway, Japan. Illustration, with description of engines recently built in America for this railway of Japan. 700 w. RR Gaz—Dec. 21, 1906. No. 81210.

British-Built Locomotives for Service Abroad. Charles S. Lake. An illustrated review of types recently shipped. 1200 w. Mech Engr—Dec. 22, 1906. No. 81331 A.

Four-Cylinder Balanced Compound Locomotive with Inclined High Pressure Cylinders. Illustrations and details of these powerful locomotives for the A., T., & S. F. Ry. 500 w. Am Engr & RR Jour—Dec., 1906. No. 80933 C.

Four-Cylinder Compound Express Locomotive for the Danish State Railways. Drawings and description of engines for working the heaviest passenger train service on the main lines of Denmark. 1700 w. RR Gaz—Dec. 14, 1906. No. 80967.

Four-Cylinder Compound Locomotive; Austrian State Railways. Dimensions and illustrated description. 800 w. Engng—Dec. 14, 1906. No. 81249 A.

Four-Cylinder Compound Locomotives with Lentz Valves. Plate and description of an engine built for the Prussian State Railways, and exhibited at Milan. 1000 w. Engng—Nov. 30, 1906. No. 80926 A.

Four-Cylinder 2-10-0 Type Locomotive, Austrian State Railways. Charles S. Lake. Illustrated description of a spe-



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cially designed locomotive for piloting the heaviest train over the Arlberg division of the State Railways. 600 w. Mech Engr—Nov. 24, 1906. No. 80824 A.

New Locomotives for National Rys. of Mexico. Illustrates and describes five Pacific type locomotives recently completed for these lines. There are three different classes, which are compared. 2000 w. Ry & Engng Rev—Dec. 29, 1906. No. 81349.

Prairie Type Compound Engines at Milan Exhibition. Illustrates and describes a locomotive for the Austrian State Railways. 900 w. Engr, Lond—Nov. 30, 1906. No. 80928 A.

Six-Coupled Tank Locomotive, with Lentz Reversing Gear. Illustrated description of an interesting small engine exhibited at Milan. 500 w. Engng—Dec. 21, 1906. No. 81341 A.

Six-Wheels Coupled Locomotives for Passenger and Goods Service on the Caledonian Railway. Charles S. Lake. Illustrates three new classes of these locomotives recently introduced, with their leading dimensions. 800 w. Mech Engr—Dec. 1, 1906. No. 80919 A.

Some Interesting Types in Development of Four-Cylinder Compound Locomotives. Illustrated descriptions of recent designs, including a Cole compound, Vauclain balanced compound, and Mallet articulated compound. 2200 w. Ry Mas Mech—Dec., 1906. No. 80963.

Tank Locomotive for the Kiushiu Railway of Japan. Illustrated description of engines built in America for this Japanese railway. 300 w. Ry Age—Dec. 7, 1906. No. 80899.

The Stephenson and the Development of the Locomotive. H. J. Thorkelson. Reviews the early history of the use of steam for propulsion, and especially the important work done by the Stephenson. Ills. 7500 w. Wis Engr—Dec., 1906. No. 81276 D.

Balanced Compound Pacific Type Locomotive, National Ry. of Mexico. Illustrations showing the principal features of the design, with dimensions. 500 w. Ry & Engng Rev—Jan. 19, 1907. No. 81709.

Heavy Consolidation Freight Locomotive with Walschaert Valve Gear. Illustrated description of new locomotives for the Delaware & Hudson Co. 500 w. Am Engr & R R Jour—Jan., 1907. No. 81358 C.

Heavy Mogul Freight Locomotive with Walschaert Valve Gear. Illustrated description of very heavy engines, three of which have been built for the Vandalia

railroad. 900 w. Am Engr & R R Jour—Jan., 1907. No. 81359 C.

Motive Power of the Lehigh Valley Railroad. From "Development of the Locomotive," by Angus Sinclair. Interesting review of the early history of the road, especially the engines used. Ills. 3000 w. Ry & Loc Engng—Jan., 1907. No. 81448 C.

Locomotives for the Italian Government Railways. Illustrates and describes engines recently built in America for these railways. 600 w. R R Gaz—Jan. 11, 1907. No. 81566.

The Heisler Geared Locomotive. Explains the advantage of geared locomotives on grades for which they are adapted, and gives an illustrated description of a recent engine of this type weighing 52 tons. 500 w. Ry Age—Jan. 25, 1907. No. 82006.

4-4-2 type Passenger Locomotive, Hungarian State Railways (Neueste Schnellzugs-Lokomotivtype Kategorie I der Königl ungarischen Staatsbahnen). R. Nagel. Illustrated description of Atlantic type engine to pull 300 ton trains at 86 miles per hour. 2200 w. Glaser's Annalen—Dec. 15, 1906. No. 81816 D.

New Locomotives, Buenos Ayres and Rosario Railway. Illustrates and describes three types of engines being put to service on this line, which is the most important in South America. 800 w. Prac Engr—Jan. 18, 1907. No. 81977 A.

Passenger and Freight Locomotives. Illustrates and describes a Pacific type passenger engine, and a consolidation type freight engine, built for the Central of Georgia railway. 500 w. Am Engr & R R Jour—Jan., 1907. No. 81360 C.

2-8-2 Type Electric Locomotive. Illustrated description of the electric locomotives for the New York Central lines, with report of results obtained. 2200 w. Am Engr & R R Jour—Jan., 1907. No. 81354 C.

Ten-Wheel Coupled Locomotive with Schmidt Superheater. Illustrated description of an engine exhibited at Milan. Plate. 700 w. Engng—Jan. 4, 1907. No. 81650 A.

Six-Coupled Bogie Passenger Engine—Caledonian Railway. Illustrated description of an engine of the 4-6-0 type, with inside cylinders driving on the front axle of the coupled wheels. 300 w. Engr, Lond—Dec. 28, 1906. No. 81543 A.

Mogul Locomotives for the Vandalia. Illustrates and describes heavy (2-6-0) locomotives recently built. 1000 w. R R Gaz—Jan. 4, 1907. No. 81439.

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Mexican Central Oil Burner. Illustrated description of 2-8-0 freighters burning crude oil. 600 w. Ry & Loc Engng—Jan., 1907. No. 81449 C.

Locomotive Work on the Northern Railway of France. A report of performances during August, 1906, showing every day work under ordinary conditions. 3500 w. Engng—Jan. 4, 1907. No. 81651A.

National Characteristics in Locomotive Building. Abstract translation of a summary given by Maurice Demoulin. 3000 w. R R Gaz—Jan. 25, 1907. Serial. 1st part. No. 81925.

The Modern Locomotive—1906. Carl B. Smith. A brief review of the development, especially recent progress. 4000 w. Jour Worcester Poly Inst—Jan., 1907. No. 81780 C.

The Steam Locomotive of the Future. Lawford H. Fry. Gives an illustrated study of present types, considering the combustion of the fuel, production of the steam, utilization of the steam, and impulse by the adhesion of the driving wheels. 5000 w. Cassier's Mag—Jan., 1907. No. 81784 B.

Four-Cylinder Compound Locomotives for the Italian State Railroads. Illustrated description of a locomotive at the Milan exposition, which possesses many variations from standard practice. 3000 w. R R Gaz—Feb. 1, 1907. No. 82081.

Locomotives for the Italian Government Railways. Illustrations showing the principal features of American built locomotives of the consolidation type, with single-expansion cylinders, and of the ten-wheel type with balanced compound cylinders, with descriptions. 500 w. Ry Age—Feb. 8, 1907. No. 82202.

Pacific Type Locomotives. Illustrates and describes Pacific type passenger locomotives for the National Railway of Mexico. They include an example of four different cylinder arrangements and of both Walschaert and Stephenson valve gear. 1800 w. Am Engr & R R Jour—Feb., 1907. No. 82075 C.

Mexican Central Oil Burner. A description of this engine, illustrating the firebox. 1000 w. Ry & Loc Engng—Feb., 1907. No. 82126 C.

Four-Cylinder Simple Locomotive. Illustrated description of an Atlantic type locomotive equipped with four simple cylinders. 1200 w. Am Engr & R R Jour—Feb., 1907. No. 82073 C.

Six-Coupled Passenger Express Locomotive; Caledonian Railway. Detailed drawings and description of locomotives

used for heavy corridor-train service. 900 w. Engng—Feb. 1, 1907. No. 82256 A.

Four New British Locomotives. Engravings and leading particulars in regard to four engines recently designed and constructed in England. 600 w. Engr, Lond—Jan. 25, 1907. No. 82156 A.

Santa Fe Type Baldwin Locomotive with Superheater, P. S. & N. Ry. Illustrated description of the 30,000th locomotive constructed by the Baldwin Locomotive Works, especially the improved superheater. 700 w. Ry & Engng Rev—Feb. 23, 1907. No. 82559.

Pittsburg Shawmut & Northern 10-Coupled Locomotive. Illustrates and describes an engine using superheated steam economically at a comparatively low pressure. 400 w. Ry Age—Feb. 15, 1907. No. 82428.

Successive Experiments and Improvements on Locomotives of the Pennsylvania Railroad. C. H. Caruthers. An illustrated review of improvements in brakes, smokestacks, and numerous other parts. 6000 w. R R Gaz—Feb. 22, 1907. No. 82537.

Passenger Locomotive with Feed Water Heater (2-4 Gekuppelte Personenzuglokomotive mit Speisewasservorwärmern). E. Sauer. A feed water heater located in the smokebox and supplied by a pump. Ills. 5500 w. Zeitschr d Vereines Deutsch Ingenieure—Jan. 5, 1907. No. 82354 D.

Compound v. Simple Locomotives. A statement of facts and arguments bearing on this question, and aiding in determining whether, or not, compounding would be of service. 3300 w. Engr, Lond—March 1, 1907. No. 83004 A.

New Applications of the Mallet System to powerful American Locomotives (Nouvelles Applications du Système Mallet aux Locomotives Américaines de grande puissance). Henry Martin. Illustrated detailed description of Great Northern, Erie, and Baltimore and Ohio locomotives built on this system. Ill. 5500 w. Génie Civil—Feb. 9, 1907. No. 82086 D.

Modern Locomotive Engineering in Germany. Charles S. Lake. Gives particulars of the design and proportions of locomotives built in accordance with German ideas at the present time, embracing locomotives for home and foreign service, and for varying classes of traffic. Ills. 1500 w. Mech Engr—March 30, 1907. Serial. 1st part. No. 83546 A.

The Design of Recent English Locomotives. Particulars and illustrations of some of the new engines recently placed in English service. 3500 w. Eng News—April 18, 1907. No. 83890.

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Mogul Locomotives for the Isthmian Canal Commission. Gives the principal features in the design of these engines, with illustrations. 300 w. Ry & Engng Rev—April 13, 1907. No. 83729.

Heavy Vandalia Moguls. Illustration, with description of heavy 2-6-0 engines. 600 w. Ry & Loc Engng—April, 1907. No. 83534 C.

Narrow-Gauge Eight-Wheel Duplex Locomotive. Illustrated description of an engine built for a railway of 2 ft. 5½ in. gauge, in the Island of Euboea, designed for large hauling power and suited to sharp curves. 500 w. Engng—April 12, 1907. No. 83881 A.

New Locomotives for the National Railway of Mexico. Illustrates and describes Pacific type locomotives recently completed. They comprise 3 simple engines with Richardson slide valve, 1 with All-free-Hubbell valves and cylinders, and 1 Cole four-cylinder balanced compound engine with Walschaert valve gear. 900 w. Ry Age—April 5, 1907. No. 83536.

New Locomotives for the Cerro de Pasco Ry. Illustrates and describes two engines of the Mikado type and one of the Mogul type built for freight service on a standard-gauge road in Peru. 500 w. Ry & Engng Rev—April 6, 1907. No. 83537.

New Type of Great Western Express Engine: An Evolution. Charles Rous-Marten. Introductory remarks on the work of Mr. G. J. Churchward, describing some of his designs, and giving a description of the new type, of which ten are under construction. 3500 w. Engr, Lond—March 29, 1907. Serial. 1st part. No. 83451 A.

Simple Decapod Locomotive. Illustrated description of heavy simple engines for pushing service on the B., R. & P. railroad. 600 w. Am Engr & R R Jour—April, 1907. No. 83488 C.

Tank Locomotive for the Nevada Northern. A heavy tank engine, intended for service between the mines and smelting plant of the Nevada Consolidated Copper Co., is illustrated and described. 400 w. Ry Age—April 12, 1907. No. 83727.

Smith & Perkins, and Their Locomotives. C. H. Caruthers. Drawings, illustrations, descriptions, and general information concerning engines built in Alexandria, Va., between the years 1851-1858. 3500 w. R R Gaz—April 19, 1907. No. 83829.

New Locomotive for the Italian State Railways (Nuove Locomotive delle Ferrovie Italiane di Stato). Description of this

four-cylinder compound locomotive. Ill. 2000 w. Il Monit Tech—March 30, 1907. No. 83679 D.

Ten-Wheel Locomotive for the St. Louis and San Francisco. Illustrated description of locomotives fitted with the Walschaert valve motion, worked out so that the motion is carried in a straight line, without offset, from the eccentric crank to the valve stem. 400 w. R R Gaz—April 26, 1907. No. 83923.

British Locomotives in 1906. Charles Rous-Marten. Reviews the main features of British locomotive practice and performance for the year just ended. Ills. 6300 w. Bul Int Ry Cong—May, 1907. No. 85289 E.

Some Remarkable Locomotives of 1906. J. F. Gairns. Illustrated descriptions of selected locomotives. 3000 w. Cassier's Mag—June, 1907. No. 85183 B.

Articulated Locomotives for Road Service on Great Northern Ry. Illustrated detailed description of engines for heavy service. 800 w. Ry & Engng Rev—June 8, 1907. No. 84861.

DeGlehn Compound for the Paris-Orleans Railway. Illustrated description of a type of which 20 have recently been built in America on the metric system of measurements. 2000 w. R R Gaz—June 7, 1907. No. 84802.

Four-Cylinder Compound Express Locomotive for the Danish State Railway. Illustrations and dimensions of an interesting type of engine. Plate. 200 w. Engng—June 14, 1907. No. 85243 A.

Mallet Compound Freight Locomotive. Illustrated detailed description of engines for the Great Northern Railway. 900 w. Am Engr & R R Jour—June, 1907. No. 84785 C.

Pacific Locomotive for the Atlanta & West Point. Illustrated description of 4-6-2 locomotives which are excellent examples of modern heavy passenger engines. 1200 w. R R Gaz—June 7, 1907. No. 84805.

Pacific Type Locomotive for Heavy Express Service on the Pennsylvania R R. Brief illustrated description of an engine weighing 173,550 lbs. just put in service. 400 w. Eng News—June 20, 1907. No. 85152.

Simple Ten-Wheel Locomotive. Illustrated description of locomotive equipment for the Chicago & Northwestern Railway. A simple ten-wheel locomotive with Walschaert valve gear is shown. 900 w. Am Engr & R R Jour—June, 1907. No. 84793 C.

Six-Coupled Bogie Tank Locomotive;

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Midland Railway. General view and sectional elevation, with description. 700 w. Engng—May 31, 1907. No. 84892 A.

New Locomotives for the Italian State Railways (Nuove Locomotive delle Ferrovie Italiane di Stato). Illustrated detailed description of new rolling stock. Serial. 1st part. 3000 w. Il Monitore Tech—May 20, 1907. No. 84925 D.

Consolidation (2-8-0) Type, Compound Locomotive,—St. Gothard Railway. Illustrated description. 700 w. Mech Engr—June 22, 1907. No. 85379 A.

The Most Powerful Express Locomotive Ever Built. Illustrates the first and latest locomotives of the Pennsylvania Railroad, describing the most powerful engine built up to this time. 1200 w. Sci Am—June 29, 1907. No. 85312.

Counterbalancing the Balanced Compound Locomotive. O. W. Ott. Gives an example taken from actual practice. 1200 w. Ry Mas Mech—March, 1907. No. 82867.

Compound for the Mexican National. Illustration, with principal features of the design of a balanced compound Pacific type locomotive. 500 w. Ry & Loc Engng—March, 1907. No. 82698 C.

Consolidation Locomotive for the Nippon Tetsudo Kwaisha Railroad. Illustrated detailed description of an engine built in America for the narrow-gauge railroads of Japan. 800 w. R R Gaz—March 8, 1907. No. 82802.

The 4-Cylinder Locomotive in Great Britain. Charles S. Lake. Discusses the value of this locomotive in its compound and non-compound type, urging that it be given an impartial trial. 2000 w. Mech Engr—March 16, 1907. No. 83261 A.

Four-Cylinder Non-Compound Engine—Great Western Railway. Drawings, with brief note. 200 w. Engr, Lond—Feb. 22, 1907. No. 82841 A.

British-Built Locomotives for Service Abroad. Charles S. Lake. Introductory remarks on the British export trade, with illustrated description of some recently completed locomotives. 1200 w. Mech Engr—March 2, 1907. No. 82887 A.

A High-Speed Bavarian Locomotive. William Mayner. Illustration and short description of an engine exhibited at Nürnberg, designed for a normal speed of 94 miles an hour. 600 w. Sci Am—March 9, 1907. No. 82806.

German Tank Engines. Brief illustrated descriptions of a standard gauge and a narrow gauge engine for industrial railway service. 300 w. Ry & Loc Engng—March, 1907. No. 82699 C.

The Four-Cylinder Express Locomotives of the Danish State Railway. O. Busse. Chief dimensions and illustrated description. 1600 w. Bul Int Ry Cong—Feb., 1907. No. 83290 E.

Santa Fe Type Locomotive with Smokebox Superheater. Illustrated detailed description of a very heavy simple 2-10-2 locomotive for the P. S. & N. R. R. 800 w. Am Engr & R R Jour—March, 1907. No. 82780 C.

Tank Engine for the Nevada Northern. Illustrates and describes a suburban tank engine of the 2-8-2 type. 600 w. Ry & Loc Engng—March, 1907. No. 82701 C.

A Snow Locomotive for Logging Work. Illustrated description of an interesting engine for hauling logs on sleds over hard-packed snow. 600 w. Eng News—March 14, 1907. No. 83135.

The Modern Locomotive. Paul T. Warner. Discusses the features of modern locomotives which have made possible the meeting of present day demands, giving brief illustrated descriptions of some of the engines. 6000 w. Jour Fr Inst—May 1, 1907. No. 84551 D.

An Interesting Order of Locomotives. Illustrates and describes the ten locomotives for the Central Railroad of Brazil. Six are of the consolidation type, two of which are equipped with Baldwin superheaters; two are single expansion 10-wheel locomotives fitted with Vaughan superheaters, and two are 10-wheel type with balanced compound cylinders. 1400 w. Ry Mas Mech—May, 1907. No. 84269.

An Italian Balanced-Compound Passenger Locomotive with Cab in Front. Illustrates and describes a peculiar design introduced extensively on the Adriatic lines of the Italian State Rys., with report of service. 1500 w. Eng News—May 23, 1907. No. 84498.

Italian Balanced Compound Locomotive. Illustrated detailed description of a high-powered "Prairie" type engine for fast passenger trains. 1500 w. Engr, Lond—April 19, 1907. No. 84006 A.

Compound Locomotive, St. Gothard Railway. Illustrated description of an engine recently built for the most difficult service on this line. 700 w. Engr, Lond—May 17, 1907. No. 84584 A.

Standard Locomotives of the Midland Railway. Illustrates four of the standard freight and passenger locomotives in use on this English railway, giving descriptions and tractive power. 1200 w. R R Gaz—May 24, 1907. No. 84541.

Simple Consolidation Locomotive. Illustrated description of heavy single ex-

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pansion freight engines built for the Colorado Southern, New Orleans and Pacific Railroad. 800 w. *Am Engr & R R Jour*—May, 1907. No. 84096 C.

Decapod Locomotive for the Buffalo, Rochester & Pittsburg. Elevation, sections, and description of the heaviest simple engines ever built for pushing service. 900 w. *Ry Age*—May 10, 1907. No. 84285.

Four-Cylinder Simple Ten Wheel Locomotive. Charles S. Lake. Illustrates and describes a type of powerful high speed locomotives in service on the London & Southwestern Railway. 2000 w. *Am Engr & R R Jour*—May, 1907. No. 84094 C.

The Four Cylinder Balanced Compound in Actual Service. H. A. F. Campbell. Presents records made by 4-cylinder balanced compound Atlantic locomotives in actual service. 4000 w. *Ry Mas Mech*—May, 1907. No. 84266.

High-Power Articulated Locomotives in the United States (*L'Emploi de Locomotives Articulées de Grande Puissance aux Etats-Unis*). M. Japiot. Describes the Mallet locomotives in use on the Baltimore & Ohio, Great Northern, and Erie Railroads. Ill. 6000 w. *Rev Gén des Chemins de Fer*—April, 1907. No. 84110 G.

Road Performance of Mallet Compound Locomotives. A report of these engines for helper service on the mountain divisions of the Great Northern Railroad. 800 w. *Ry Mas Mech*—May, 1907. No. 84267.

Rack Locomotive for the Trans-Andine Railway. Describes the line on which these engines are to be used, and gives an illustrated description of the locomotives. Plate. 1500 w. *Engng*—May 17, 1907. No. 84578 A.

Ulster & Delaware Ten-Wheeler. Illustrated description of a ten-wheel (4-6-0) simple engine. 400 w. *Ry & Loc Engng*—July, 1907. No. 85428 C.

A Remarkable Locomotive. Charles S. Lake. Illustration, with description of the new Pacific (4-6-2) type for the Pennsylvania lines. 900 w. *Mech Engr*—July 13, 1907. No. 85857 A.

Ten-Wheel Locomotive for the Chicago & North-Western. Illustrates and describes engines equipped with the Walschaert valve gear, designed for all-around freight service. 1200 w. *R R Gaz*—July 5, 1907. No. 85465.

Express Passenger Engine, Midland Railway. Plate, illustration and description of the latest type of the Midland Ry. simple express passenger Belpaire engine of the 4-4-0 type. 700 w. *Engr, Lond*—July 5, 1907. No. 85598 A.

Four-Cylinder Compound Express Locomotive; Danish State Railways. Two-page plate and further particulars of the "Atlantic" type locomotive, designed by O. Busse. 1700 w. *Engng*—June 28, 1907. No. 85501 A.

Passenger Locomotive for the Duchy of Oldenburg Railroads. An illustrated description of an engine of the 4-4-0 type, the 5,000th locomotive built by the Hannoversche Maschinenbau - Actien - Gesellschaft. 1000 w. *R R Gaz*—July 19, 1907. No. 85784.

Passenger Locomotives of the 4-4-4 Type with Bar Frames: Bavarian State Railways. Illustration, with description of some notable engines for fast service with heavy passenger trains. 700 w. *Eng News*—July 25, 1907. No. 85887.

Recently Constructed Italian Locomotives. Charles S. Lake. Photographs and descriptions of recent engines built by the Società Italiana. Ernesto Breda, of Milan. 2000 w. *Mech Engr*—July 6, 1907. No. 85579.

A Balanced Compound Locomotive for the Italian State Railroads. Illustrated description of an express locomotive having novel features of exceptional interest 2500 w. *R R Gaz*—Aug. 2, 1907. No. 86110.

A New Mountain Locomotive. Trans. from *La Nature*. An improved system with increased adherence, used on the Puy de Dome road in France, is illustrated and described. 1800 w. *Sci Am Sup*—Aug. 3, 1907. No. 86069.

An Interesting Locomotive Conversion. Illustrates and describes the rebuilding of some locomotives on the Great Western Ry., changing 6-wheel engines with tenders into tank locomotives with the 2-6-2 wheel arrangement. 1000 w. *Mech Engr*—Aug. 3, 1907. No. 86351 A.

Atlantic Locomotives of the Austrian State Railways and the Southern Railway (Atlantik-Lokomotive der Oesterreichischen Staatsbahnen und der Südbahn). R. Sanzin. Illustrated detailed description with dimensions and results of tests. 3000 w. Serial. 2 parts. *Verkehrstech Woche u Eisenbahntech Zeitschr*—July 6 and 13, 1907. No. 86242 each D.

Bothwell Convertible Locomotive. Illustrates and describes a reconstructed locomotive aiming at maximum hauling capacity with the least weight. 700 w. *Ry & Engng Rev*—Aug. 3, 1907. No. 86118.

British-Built Locomotives for India. Illustrations, with descriptions of a new 4-6-0 type express engine for the Bombay, Baroda, and Central India Ry., and a du-

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plex, or Fairlie type locomotive for the Burma Ry. 1500 w. Mech Engr—Aug. 10, 1907. No. 86453 A.

British Tank Locomotives. J. R. Thompson. Illustrated description of a tank locomotive for long-distance service on the Midland Railway of England. 700 w. Cassier's Mag—Aug., 1907. No. 86-012 B.

Decapod Locomotive for the Buffalo, Rochester & Pittsburg. Illustrated description of one of the six decapod (2-10-0) locomotives recently built for pusher service. 1200 w. R R Gaz—Aug. 9, 1907. No. 86193.

Locomotives on the Lancashire and Yorkshire Railway. A brief account of the development of the Horwich Works, with illustrated descriptions of engines and motor cars built. 1300 w. Engng—Aug. 9, 1907. No. 86470 A.

Mallet Compound Locomotive for the Erie Railroad. Compares the Erie engine with the Baltimore & Ohio engines, and gives illustrated description of interesting features, and the principal dimensions. 2200 w. R R Gaz—Aug. 16, 1907. No. 86414.

Pacific Locomotive for the Pennsylvania Lines. The heaviest engine of this type ever constructed, having a total weight of 269,200 pounds, is illustrated and described. 500 w. Ry Age—Aug. 23, 1907. No. 86566.

Prairie for the Soo Lines. Illustration, with brief description of engines intended for mixed service. 700 w. Ry & Loc Engng—Aug., 1907. No. 86044 C.

Prairie Locomotive for the Minneapolis, St. Paul Sault Ste. Marie. Illustration, dimensions and particulars of engines for both freight and passenger service. 700 w. R R Gaz—Aug. 2, 1907. No. 86107.

Recent British Locomotives for Abroad. Illustrated description of a 4-cylinder balanced compound locomotive for the Buenos Ayres Gt. Southern Ry., and of a 6-wheeled locomotive crane engine for India. 700 w. Mech Engr—July 27, 1907. No. 86156 A.

Siamese and Westphalians. Illustrates two standard gauge engines built in Germany. One is a freight engine for burning wood; the other of unusually strong construction and special design to meet requirements of the Westphalia Ry. 400 w. Ry & Loc Engng—Aug., 1907. No. 86-046 C.

Simple Consolidation Locomotive. Illustrated description of a very interesting locomotive, fitted with Baldwin superheater, being shown at Jamestown Exhi-

bition. 900 w. Am Engr & R R Jour—Aug., 1907. No. 86049 C.

Six-wheel Coupled Locomotive (Metre-Gauge) for the Federated Malay States Railways. Illustration, with particulars. 500 w. Engng—July 26, 1907. No. 86176 A.

Ten Wheeled Coupled Freight Locomotives for the Austrian State Railways (5-5 Gekuppelte Güterzugslokomotive der Oesterr. Staatsbahnen). R. Sanzin. Illustrated detailed description. 3000 w. Oest Wochenschr f d Oeffent Baudienst—July 20, 1907. No. 86269 D.

Ten-Wheel Locomotive for the Canadian Pacific. Engines equipped with the Horsey-Vaughan type of superheater, and representing the use of large cylinders and low boiler pressure in conjunction with superheated steam are illustrated and described. 500 w. Ry Age—Aug. 23, 1907. No. 86568.

The Work of the "Experiments" on the London and Northwestern Railway. On the performance of the first-six-coupled express passenger engines tried on this line, giving records of the work on the southern section, between Euston and Crewe. 2500 w. Engng—July 26, 1907. No. 86174 A.

A New Continental Locomotive Type. Illustrated description of the Pacific (4-6-2) type compound engine for the Paris-Orleans Ry. 800 w. Mech Engr—Aug. 24, 1907. No. 86718 A.

Goods Locomotive for the Lancashire and Yorkshire Railway. Illustrates and describes interesting particulars of the 1000th locomotive built by this railway company. Plate. 800 w. Engng—Aug. 23, 1907. No. 86736 A.

Recent Locomotives and Carriages on the L. & Y. Railway. Brief illustrated account of the Lancashire and Yorkshire Railway Locomotive Works and of engines and cars built there. 1700 w. Engr, Lond—Aug. 30, 1907. No. 86874 A.

British 4-Cylinder Locomotives. Charles S. Lake. General discussion of the advantages and disadvantages of these engines, with illustrations and brief descriptions of recent types. 1600 w. Ry Age—Sept. 27, 1907. No. 87286.

Recent British Locomotives for Abroad. Illustrated description of locomotives lately shipped to Ceylon, South America, and Brazil. 1000 w. Mech Engr—Aug. 31, 1907. No. 86857 A.

Pacific Locomotive for the Pennsylvania Lines West. Illustrated description of a 4-6-2 locomotive, which is the heaviest passenger engine that has been built up to the present time for any road. 1500 w. R R Gaz—Aug. 30, 1907. No. 86663.

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The Locomotives of the Atchison, Topeka and Santa Fe Railway. Map showing the extent of this system, with illustrated descriptions of types of locomotives used and account of the service. 3000 w. Engr, Lond—Sept. 13, 1907. No. 87217 A.

Mallet Articulated Compound Locomotive, 0-8-8-0 Type. Full illustrated detailed description of the first of an order of three pushing locomotives for the Erie R. R., which break all records of weight, size and power. 2000 w. Am Engr & R R Jour—Sept., 1907. No. 86803 C.

A Note on Compound Locomotives. M. Maurice Demoulin. An examination of data relating to compound locomotives, with personal opinions. 3500 w. Engr, Lond—Aug. 23, 1907. Serial. 1st part. No. 86738 A.

Transportation and Machinery at the Bavarian Centennial Exposition at Nuremberg, in 1906 (*Das Verkehrs-und Maschinenwesen auf der Bayerischen Jubiläums-Landesausstellung zu Nürnberg, 1906*). Kurt Hering. Illustrated description of exhibits. The present number is devoted to railways and locomotives. Serial. 1st part. 2000 w. Glasers Ann—Nov. 1, 1906. No. 80611 D.

Curiosities of Locomotive Design. Angus Sinclair. From "Development of the Locomotive Engine." Illustrates and describes peculiar designs. 1800 w. Ry & Loc Engng—Oct., 1907. No. 87316 C.

Seth Wilmarth's Locomotives. C. H. Caruthers. An account of works once existing in Boston, Mass., and the engines built. Ills. 1800 w. R R Gaz—Sept. 27, 1907. No. 87916.

The Development of the American Locomotive. Report of the Committee on Science and Arts on the contribution of the Baldwin Locomotive Works. Ills. 5500 w. Jour Fr Inst—Oct., 1907. No. 87758 D.

Details of Mallet Articulated Compound Locomotive. Detailed description of the interesting special features. Ills. 4000 w. R R Gaz—Oct. 4, 1907. No. 87923.

Pusher Locomotives of the Mallet Duplex Type for the Erie Ry. Illustration with description. 1000 w. Eng News—Oct. 3, 1907. No. 87420.

Pacific Locomotive for the Lake Shore and Michigan Southern. Compares them with the prairie engines which have been used up to the present, and gives an illustrated description. 2500 w. R R Gaz—Sept. 6, 1907. No. 87902.

Pacific Type Locomotives. Illustrated description of new engines for freight and passenger service on the Richmond, Fredericksburg & Potomac R. R. 600 w. Am

Engr & R R Jour—Oct., 1907. No. 87419 C.

Four Cylinder Simple Express Locomotives; Great Western Railway. The latest type of locomotive for hauling express passenger traffic on this line is illustrated and described. 500 w. R R Gaz—Oct. 4, 1907. No. 87924.

Compound Ten-Wheel Locomotives for the Buenos Ayres Western Railway. Illustrated description of compound passenger and freight locomotives, having special features of interest. 600 w. R R Gaz—Sept. 6, 1907. No. 87904.

Royal Bavarian 4-4-2. Illustration with brief description of a type in use on the continent of Europe. 500 w. Ry & Loc Engng—Oct., 1907. No. 87317 C.

An Interesting Locomotive. Illustrates and describes an example of the latest construction of light passenger engines for the Austrian State Railways, to serve main line feeders. 600 w. Ry & Engng Rev—Oct. 5, 1907. No. 87498.

Express Locomotive for the Prussian State Railways. Illustrated description of the latest type of six-coupled express locomotive, fitted with the Schmidt type of smoke-tube superheater. 1500 w. Plate. Engng—Oct. 11, 1907. No. 87839 A.

See also Sast Steel, Centre of Gravity, Compression, Corrugated Flues, Driving Shoes, Fire Boxes, Fuel, Milan Exposition, Oscillations, Overbalancing, Repairs, Smoke, Smoke Box, Steam vs. Electricity, Steam Domes, Stokers, Superheating, Tiregraph, Valve Gears, and Water Purification, under MOTIVE POWER AND EQUIPMENT; and Locomotives, under MECHANICAL ENGINEERING, MATERIALS OF CONSTRUCTION.

## Locomotive Tests.

Locomotive Tests. Dr. W. F. M. Goss. Compilation from a publication by the Pennsylvania Railroad entitled: "Locomotive Tests and Exhibits. The Pennsylvania Railroad System at the Louisiana Purchase Exposition." Ills. 10300 w. Bul Int Ry Cong—Dec., 1906. No. 81384 E.

Recent High-Speed Trials of Steam Locomotives. Translated from *Zeitung des Vereins*. A report of recent trials with steam locomotives running long distances. 2900 w. Bul Int Ry Cong—Nov., 1906. No. 80742 E.

Analysis of Locomotive Tests. Sidney A. Reeve. Gives analyses made to ascertain what proportions of heat developed within a locomotive boiler were absorbed by the earlier and later portions of the heating surface, or by fire-box and tubes,

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or were lost up the stack. The St. Louis tests formed the basis for the investigation. 1200 w. *Pro Am Soc of Mech Engrs*—June, 1907. No. 84643 F.

High Steam Pressures in Locomotive Service. W. F. M. Goss. A statement of methods of research to determine the value of high steam pressures in locomotive service, discussing the results. General discussion. 15400 w. *Pro W Ry Club*—Nov. 20, 1906. No. 81058 C.

Locomotive Performance Data Developed at Purdue. Editorial review of valuable information obtained from this testing plant. 1700 w. *R R Gaz*—May 3, 1907. No. 84073.

Locomotive Road Tests. W. H. Winterrowd, W. L. Scantlin, W. L. Batt, F. A. Schaff. Tests made to determine the relative efficiencies of consolidation locomotives equipped with Walschaert and with the Stephenson valve-gears. Ills. 1000 w. *Purdue Engng Rev*—1907. No. 85935 N.

Some Important Results from the Pennsylvania Railroad Testing Plant at St. Louis. A convenient table containing results obtained from locomotives tested at the St. Louis Fair. 800 w. *Am Eng & R R Jour*—Sept., 1907. No. 86804 C.

A Method of Plotting Locomotive Characteristics. Lawford H. Fry. Gives a diagram showing a system of plotting the results of locomotive tests to give a series of characteristic curves which cover the whole range of operation. 2000 w. *Am Engr & R R Jour*—Oct., 1907. No. 87416 C.

The Results of Tests on Tank Locomotives Using Superheated Steam (*Versuchs- und Betriebsergebnisse mit Heissdampf-Tenderlokomotiven*). Herr Müller. Gives tables and curves showing the performance of the 10-wheel locomotives of the Prussian state railways. Ills. 3500 w. *Verkehrstech Woche u Eisenbahntech Zeitschr*—Sept. 7, 1907. No. 87627 D.

Tests of the Live Load on Driving Springs. Charles A. Howard. Illustrates and describes apparatus designed for the purpose of furnishing data to enable the live load to be determined. 1500 w. *Ry Age*—Aug. 2, 1907. No. 86122.

## Management.

The Motive Power Officer of a Great Railway. G. M. Basford. Address before the Mech. Engrg. Sec. of Purdue Univ. Presents some of the mechanical problems at present before these officers, and the talents needed to cope with this important work. 4000 w. *Sci Am Sup*—Dec. 29, 1906. No. 81295.

## Milan Exposition.

Railway Exhibits at the Milan Exposition, 1906 (*Die Eisenbahnbetriebsmittel auf der Ausstellung in Mailand 1906*). Herr Metzeltin. Illustrated detailed description of locomotives, cars, etc., exhibited. 6500 w. Serial. 1st part. *Zeitschr d Ver Deutscher Ing*—May 14, 1906. No. 84977 D.

Steam and Electric Railway Traction Exhibit at the International Exposition at Milan, 1906 (*Ueber die Fahrbetriebsmittel für Eisenbahnen und Strassenbahnen auf der Internationalen Ausstellung in Mailand, 1906*). E. A. Ziffer. Detailed description of the various types of steam and electric locomotives exhibited. 6000 w. *Mitt d Ver f d Förd d Lokal u Strassenbahnwesens*—April, 1907. No. 84934 D.

Locomotives at the Milan 1906 Exposition (*Die Lokomotiven auf der Internationalen Ausstellung in Mailand 1906*). R. Sanzin. Description of various types of engines shown, with tables of dimensions, weight, etc. Illus. Continuation of serial; unfinished. 7000 w. *Zeitschr d Oesterr Ing u Arch Vereins*—March 8, 22 and 29, 1907. No. 83653 each D.

Locomotives at the Milan Exhibition. Charles S. Lake. Illustrated description of the 4-cylinder express passenger locomotives for the Hungarian and Belgian State Railways. 1400 w. *Mech Engr*—Nov. 17, 1906. No. 80711 A.

Continental Locomotives at the Milan Exhibition. Illustrates and describes interesting types shown. 4000 w. *Engr, Lond*—Dec. 7, 1906. No. 81031 A.

Locomotives at the Milan Exposition, 1906 (*Die Lokomotiven auf der Mailänder Ausstellung, 1906*). Herr Schwarz. The first instalment of the serial illustrates and describes the German exhibits. 3500 w. Serial. 1st part. *Glaser's Ann*—June 1, 1907. No. 85666 D.

Passenger and Freight Cars at the Milan Exposition, 1906 (*Personen- und Güterwagen auf der Mailänder Ausstellung 1906*). Herr Messerschmidt. Gives the general characteristics of the exhibits from the various European countries. 2200 w. *Glaser's Ann*—June 1, 1907. No. 85664 D.

Railway Rolling Stock at the Milan Exposition (*Le Matériel Roulant des Chemins de Fer à l'Exposition de Milan*). L. Georges. The first number of the serial gives an elaborate, detailed description of the various types of locomotives shown, illustrated by many plates and drawings. 20000 w. Serial. 1st part. *Rev Gen d Chemins d Fer*—Aug., 1907. No. 86922 G.



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## Motor Cars

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Locomotive Exhibit at the Milan Exposition. Abstract translation of an article by M. L. Georges, in the *Revue Generale*. Ills. 1600 w. Ry & Engng Rev—Oct. 5, 1907. No. 87497.

### Motor Cars.

Motor Car or Locomotive (Motorwagen oder Lokomotive). Emil Schimanek. Discusses the results of tests made on the Hungarian State Railways to determine the relative economy of motor car and locomotive operation over short hauls. 3000 w. Glaser's Ann—June 15, 1907. No. 85668 D.

Pennsylvania Report on Motor Cars. Extracts from report of a special committee appointed to study the operation of foreign road and rail motor cars. 3500 w. R R Gaz—May 3, 1907. No. 84075.

The Steam Motor Car: Its Value in Interurban Service. W. G. Wagenhals. Read before the Iowa St. & Int. Ry. Assn. Describes a car recently built, explaining the service for which it is intended. 2000 w. St Ry Jour—April 20, 1907. No. 83830.

Steam Railway Motor Carriage for India. Illustrated description of recently ordered self-propelled cars for the East Indian Railway Co. 500 w. Engr, Lond—June 28, 1907. No. 85505 A.

Steam Motor Cars. Illustrates and describes motor cars recently put in service on the Intercolonial Railway of Canada. 1000 w. Am Engr & R. R. Jour—Oct., 1907. No. 87417 C.

New Steam Motor Cars Designed by F. X. Komeret, Vienna (Neuere Dampfwagen von F. X. Komarek in Wien). C. Guillery. Illustrated detailed description of boiler, engine and car, and the result of competitive tests. 4000 w. Glaser's Ann—July 15, 1907. No. 86258 D.

The Steam Motor Car Under Test on the Italian State Railways (Le Vetture Automotrice a Vapore in Esperimento sulle Ferrovie dello Stato). Illustrated description of the car and motor. 3000 w. Monit Tech—June 30, 1907. No. 85622 D.

Steam Rail Motor Car for the Lancashire and Yorkshire Railway. Illustrated description. 500 w. Engng—Nov. 2, 1906. No. 80357 A.

Recent Steam Rail Motor-Cars. Charles S. Lake. Illustrates and describes types in which the engine is a separate unit instead of being carried on the same framing as the car body. 1000 w. Mech Engr—Dec. 8, 1906. No. 81022 A.

Recent Steam Motor Cars in Great Britain. Charles S. Lake. Cars used on

the Taff Vale Railway, and the Lancashire and Yorkshire Railway are illustrated and described. 900 w. Am Engr & R R Jour—April, 1907. No. 83489 C.

The Kobusch-Wagenhals Steam Motor Coach. Illustrated description of a recently completed coach built by the St. Louis Car Company. 4500 w. Sci Am Sup—Dec. 22, 1906. No. 81087.

Boilers for Railway Motor Cars. Illustrates and describes some of the more successful types of boilers used on the steam motor cars of England. 1200 w. Boiler Maker—March, 1907. No. 82678.

Motor Cars for Railways (Neuere über Triebwagen für Eisenbahnen). Hr. Guillery. Descriptions of steam, benzine-electric, gasoline-electric and other self-propelled cars for railways, with discussion of experience in many parts of the world. 3500 w. Glaser's Ann—Nov. 1, 1906. No. 80610 D.

European Railway Motor Cars. B. D. Gray. Illustrates and describes types of self-propelled cars used abroad, and gives the author's impressions of the railway motor car situation. 5400 w. Pro Am Soc of Mech Engrs—June, 1907. No. 84642 F.

Motor Cars with Gas Engine—Electric Motor Power Plant (Motorwagen mit elektrischer Kraftübertragung im Eisenbahnbetriebe). P. Poschenrieder. A car for use on steam roads in Austria. Enumeration of motor cars for steam roads and their performances in service. Illus. 4400 w. Elektrotechnische Zeitschrift—Feb. 28, 1907. No. 82965 B.

Gasoline Motor Cars for Railway Service. W. R. McKeen, Jr. Discusses the design of such cars, the engine, cost of operation, etc. General discussion. Ills. 14500 w. Pro N Y R R Club—April 19, 1907. No. 84482.

### Narrow Gauge.

See Otavi, under PERMANENT WAY AND BUILDINGS.

### Oscillations.

The Oscillations of Rolling Stock at High Speeds (Les Oscillations du Matériel dues au Matériel lui-même et les Grandes Vitesses des Chemins de Fer). Georges Marié. The first instalment deals with oscillations due to the unbalanced reciprocating parts of locomotives and to tapered tires. Mathematical discussion with practical illustrations. Ills. Serial. 1st part. 18500 w. Rev Gen des Chemins de Fer—May, 1907. No. 84902 G.

### Overbalancing.

The Overbalancing of the Locomotive. (Das Wogen und Nicken des Lokomo-

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## Refrigeration

tive). W. Lindemann. Mathematical treatment of the subject. Diagrams. 1600 w. Glaser's Annalen—Jan. 1, 1907. No. 81823 D.

The Overbalancing of Locomotives with Regard to the Dampening Effect of Springs (Das Wogen und Nicken der Lokomotive unter Berücksichtigung der Dämpfenden Wirkung der Federn). W. Lindemann. A mathematical paper. Ills. 3500 w. Glaser's Ann—July 1, 1907. No. 86257 D.

## Refrigeration.

Railroad Refrigeration. Jos. H. Hart. Remarks on the inadequate methods in present use, and the application of mechanical refrigeration. 2000. R R Gaz—Jan. 18, 1907. No. 81685.

## Repairs.

Finished Repair Parts for Locomotives. Harrington Emerson. Discusses the manufacture of new engine repair parts or the repair of old ones, considering the saving of engine delays, standardization, costs, storage, and the possibility of buying such parts in the open market. 1600 w. R R Gaz—Nov. 23, 1906. No. 80573.

Co-operation Between the Operating and Mechanical Departments. A. W. Wheatley. Suggestions for decreasing the cost of locomotive repairs. 1000 w. Am Engr & R R Jour—Sept., 1907. No. 86805 C.

## Resistance.

Train Resistance and Its Calculation by Logical Formulae (Die Widerstände der Eisenbahnzüge und die zu ihrer Berechnung dienenden Formeln). Albert Frank. Comparison of different formulae now in use. 6000 w. Zeitschr d Vereines Deutschr Ingenieure—Jan. 19, 1907. No. 82359 D.

The Resistance of Railway Trains. Editorial review of investigations made to determine train resistance. 2000 w. Engng—July 26, 1907. No. 86181 A.

## Sand Blast.

Railroad Sandcraft. J. M. Betton. On the application of the sand blast to railroad service. 3300 w. Compressed Air—April, 1907. No. 84534.

## Shops.

Organization and Economy in the Railway Machine Shop. H. W. Jacobs. Fourth number of this series. Showing how standardization of the small-tool equipment and its manufacture in the central shops will check extravagance and waste and promote economy and efficiency over the whole road. Special attention is

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given to high-speed steel and the redesign of machines, and many examples are shown. 3000 w. Engineering Magazine—Dec., 1906. No. 80694 B.

Railroad Shop Organization. C. J. Morrison. Compares the working of different shops and the effect on the output, showing the importance of organization. 1300 w. Am Engr & R R Jour—Feb., 1907. No. 82072 C.

Organization and Economy in the Railway Machine Shop. H. W. Jacobs. A summing up of the author's series on the topic; practical economies in the erecting shop, and the effect of personal stimulus on shop operatives are the special subjects covered in this concluding paper. 3500 w. Engineering Magazine—Jan., 1907. No. 81196 B.

Railway Shops on the Prairie. Brief illustrated description of the Canadian Pacific Shops at Winnipeg, Man. 1500 w. Ry & Loc Engng—Nov., 1906. No. 80226 C.

Electrical Equipment of the Hornellsville Shops of the Erie Ry. Illustrated description. 2200 w. Ry & Engng Rev—Dec. 1, 1906. No. 80788.

El Paso & Southwestern Ry. Shops. J. L. Campbell. Illustrated description of shops built of concrete, brick, and steel. 2700 w. Ry & Engng Rev—Dec. 29, 1906. No. 81348.

The El Paso & Southwestern R. R. Shops. J. L. Campbell. Illustrates and describes new shops in which reinforced concrete is largely used. 2500 w. Eng Rec—Jan. 5, 1907. No. 81489.

Battle Creek Shops of the Grand Trunk Ry. General view, plan and detailed description. 2500 w. Ry & Engng Rev—March 9, 1907. No. 82874.

The New Locomotive Repair Shops of the Lackawanna Railway at Scranton, Pa. Illustrates and describes the large modern plant for heavy and light repairs of locomotives which will soon supersede the present shops. 3500 w. Ry Age—April 12, 1907. No. 83725.

Locomotive Shops at Trenton. An illustrated detailed description of the shops of the Pennsylvania Railroad. 1800 w. Ry Mas Mech—May, 1907. Serial. 1st part. No. 84268.

A Few Specialties of the Elkhart Shops. Illustrates and describes interesting specialties introduced into these shops of the L. S. & M. S. Ry. 1800 w. Ry Mas Mech—June, 1907. Serial. 1st part. No. 84826.

Recent Shop Construction. Illustrates and describes the Burnside shops of the

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## Superheating

Illinois Central. 1800 w. R R Gaz—June 14, 1907. No. 85076.

Machine Tool Equipment of the E. P. & S. W. Ry. El Paso, Tex., Shops. Describes the machine tool equipment and layout of these shops. 2500 w. Ry & Engng Rev—June 8, 1907. No. 84862.

East Decatur Shops of the Wabash. Illustrated description of new car repair shops in Illinois. 2000 w. Ry Age—Jan. 4, 1907. No. 81443.

Car Repair Shops at East Decatur, Ill. Illustrated description of shops for the Wabash Railroad. 2500 w. Ry Mas Mech—Sept., 1907. No. 87100.

The New Springfield (Mo.) Shops of the Frisco System. Plan and description of a large locomotive repair plant under construction for the St. Louis and San Francisco System. 2500 w. Ry Age—Sept. 6, 1907. No. 86799.

New Railway Shops (Neuere Eisenbahnwerkstätten). Herr Müller. A series of articles descriptive of the shops of the Prussian state railways, the first dealing with the Oppum shops at Krefeld. Ills. 7000 w. Serial. 1st part. Verkehrstech Woche u Eisenbahntechnik Zeitschr—Sept. 14, 1907. No. 87628 D.

The Shops of the Swiss State Railways and Their Extension (Les Ateliers des Chemins de Fer Fédéraux, à Yverdon, et leur Agrandissement). M. G. Guillemin. Illustrated description of buildings and equipment. 4950 w. Bull Tech d l Suisse Rom—Sept. 25, 1907. No. 87668 D.

Tool Room Care and Economy. F. G. de Saussure. Suggestions in regard to a checking system for tools, and other helpful methods of securing economy. Ills. 1800 w. Am Engr & R R Jour—Jan., 1907. No. 81356 C.

See also Car Repairs, Repairs, and Sand Blast, under MOTIVE POWER AND EQUIPMENT.

## Smoke.

Eliminating Smoke with Locomotives Burning Soft Coal. Abstract of a report presented at meeting of the Traveling Engrs. Assn. Gives the recommendations of the committee. 2000 w. Eng News—Sept. 19, 1907. No. 87114.

## Smoke Box.

Locomotive Smoke-Box Arrangements. E. W. Rogers. Gives examples of typical types of smoke-box arrangements which are in use to-day, and the methods of laying out this part of the boiler. Ills. 1600 w. Boiler Maker—Sept., 1907. No. 86666.

## Snow-Ploughs.

Snow-Plough for the Caledonian Rail-

way. Illustrated description of an improved form of wedge-shaped plough. 300 w. Engng—March 8, 1907. No. 83116 A.

The Rotary in the Rockies. An illustrated article describing the large rotary snow plows used, and the work they accomplish. 1000 w. Ry & Loc Engng—March, 1907. No. 82697 C.

## Steam Domes.

Wrong Location of Steam Domes. B. H. Jeffries. States the writer's objections to the present location of the dome, and reasons for desiring a change. 800 w. Ry & Engng Rev—Aug. 3, 1907. No. 86120.

## Steam v. Electricity.

Steam Locomotive versus Electric Locomotive. Max Toltz. Aims to show that the steam locomotive properly improved is by far more economical than the electric locomotive. Ills. Discussion. 18300 w. Pro N Y R R Club—Sept. 20, 1907. No. 87760.

The Cost of Steam and Electric Locomotive Operation. Gerard B. Werner. Gives an analysis of the reduction in operating costs to be effected by the substitution of electricity for steam on trunk lines. 2000 w. Engineering Magazine—March, 1907. No. 82636 B.

Electric Railway Competition. Ray Morris. Gives a summary of information obtained, discussing the results shown and the development of interurban lines. 2500 w. R R Gaz—Oct. 11, 1907. No. 87929.

See also Electrification, under MOTIVE POWER AND EQUIPMENT.

## Stokers.

Mechanical Stokers for Locomotives (Mechanische Lokomotiv-Bekolungsanlagen). Friedr Zimmermann. Brief review of different devices that have been tried in service. 1700 w. Glaser's Annalen—Jan. 15, 1907. No. 82366 D.

Mechanical Stokers for Locomotives. George S. Fowler. States the requirements of such stokers, and gives plans and description of the Victor stoker and the Hayden stoker. 3000 w. Cassier's Mag—May, 1907. No. 84054 B.

## Superheating.

Locomotive Superheaters. F. J. Cole. An illustrated review showing the progress from the earliest form of superheater, and the latest practise. General discussion follows. 11000 w. Pro Cent Ry Club—Nov. 9, 1906. No. 81059 C.

The Baldwin Superheater. Illustrated description of a locomotive, equipped with a smokebox superheater, which is being exhibited at Jamestown Exposition. 600 w. R R Gaz—June 7, 1907. No. 84803.

# RAILWAY ENGINEERING

## Superheating

Simple Locomotive Fitted With Improved Smoke Tube Superheater. Wilhelm Schmidt. Illustrates and describes a Swiss locomotive fitted with the author's latest design of superheater, showing the tendency toward a higher degree of superheat. 2000 w. *Am Engr & R R Jour*—June, 1907. No. 84792 C.

Superheated Steam Locomotives in Germany. An illustrated review of the use of superheated locomotives on the Prussian State Railways, the improvements made, and a brief description of the latest locomotives. 2700 w. *Mech Engr*—Sept. 14, 1907. No. 87204 A.

Superheated Steam Passenger Locomotive, Series B $\frac{3}{4}$ , of the Swiss State Railways (Heissdampf-Personenzugslokomotive Serie B $\frac{3}{4}$  der Schweizerischen Bundesbahnen). M. Weiss. An illustrated detailed description of two locomotives recently put in service. 2300 w. *Schweiz Bau*—Aug. 3, 1907. No. 86958 D.

Are We Superheating Along Correct Lines? Editorial discussion of this subject. 1100 w. *Ry & Engng Rev*—Oct. 5, 1907. No. 87499.

See also same title, under MECHANICAL ENGINEERING, STEAM ENGINEERING.

## "Tiregraph."

A Locomotive Driving-Wheel Recording Device. Illustrates and describes this recording instrument, called a "tiregraph," by means of which the contour of tires is recorded, and reports tests made and conclusions reached. 1200 w. *Sci Am*—Aug. 17, 1907. No. 86417.

## Tires.

Causes of Defects and Failures of Steel Tires. George L. Norris. Read before the W. Ry. Club. An illustrated discussion of this subject. 2500 w. *R R Gaz*—Oct. 25, 1907. Serial. 1st part. No. 87931.

## Train Control.

New Method of Controlling the Speed of Trains (Een nieuw toestel voor de controle van de snelheid van treinen). H. P. Maas Geesteranus. Illus. 3900 w. *De Ingenieur*—Feb. 2, 1907. No. 82956 D.

New Apparatus for Controlling the Speed of Trains. H. P. Maas-Geesteranus. Illustrates and describes apparatus which has been in use for some time in Holland. 1900 w. *Bul Int Ry Cong*—May, 1907. No. 85291 E.

## Train Lighting.

Electric Train Lighting. O. W. Ott. Discusses briefly the three principal systems on the lighting of trains by electric-

## MOTIVE POWER AND EQUIPMENT

ity, the cost, maintenance, etc. General discussion. 11500 w. *Pro W Ry Club*—April 16, 1907. No. 84484 C.

Train Lighting. H. Henderson. Abstract of a paper read before the Newcastle Local Sec. of the Inst of Elec. Engrs. Deals with the lighting of railway carriages by electricity, giving particulars of cost of equipment and maintenance and describing the various systems. 2500 w. *Elect'n, Lond*—Aug. 16, 1907. Serial. 1st part. No. 86596 A.

Vibrations in Passenger Trains from High Speed Electric Lighting Engines. F. W. Huels. Gives results of tests made to measure the magnitude and character of these vibrations, describing methods and instruments used. Discussion. Ills. 7000 w. *Jour W Soc of Engrs*—April, 1907. No. 84530 D.

The Verity Dalziel System of Train Lighting. Describes a system in which the lamps are supplied at a constant voltage, the regulation being effected by electrical apparatus. Ills. 2000 w. *Elect'n, Lond*—May 24, 1907. No. 84754 A.

Storage Battery Developments in Train-Lighting Service. C. R. Gilman. Describes briefly the three principal systems of electric train lighting, with remarks on special features and the care needed. Ills. 2500 w. *Ry Age*—June 28, 1907. No. 85359.

See also Car Lighting, under MOTIVE POWER AND EQUIPMENT.

## Train Stop.

Phillips Automatic Train Stop. Illustrated description of an apparatus for automatically applying the brakes on a train, which has been in service in England for two years. 1200 w. *R R Gaz*—May 31, 1907. No. 84668.

## Valve Gears.

The Walschaerts Valve Gear in the United States (La Distribution Walschaerts aux Etats-Unis). Mons. Sauvage. Notes on the use of this locomotive valve gear. 1100 w. *Rev Gén des Chemins de Fer*—Nov., 1906. No. 80639 G.

The Mathematical Analysis of the Walschaert Valve Gear. Edward L. Coster. Analysis with diagrams, also showing how the motion can be approximately represented by Zeuner's valve diagrams. 1200 w. *Am Engr & R R Jour*—Nov., 1906. No. 80269 C.

The Walschaerts Valve Gear. An account of the development of this gear for giving motion to the valve in reversing steam engines, explaining its action. 3000 w. *Engr, Lond*—Dec. 21, 1906. No. 81345 A.

## Valve Gears

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## Valve Gears

Walschaerts vs Stephenson Gears. W. W. Wood. A discussion of the two valve motions, submitting five propositions bearing on the subject. 2000 w. Ry & Loc Engng—April, 1907. No. 83529 C.

Adjusting Stephenson Valve Gear. James Kennedy. Describes methods of careful adjustment. 2000 w. Ry & Loc Engng—April, 1907. No. 83535 C.

Results of Use of Different Valve Gears on Locomotives. From the report of committee of the Am. Ry. Master Mechs.' Assn. Discusses valve-actuating mechanism and some systems of steam distribution. 1800 w. Eng News—June 20, 1907. No. 85153.

Express Passenger Engine, Midland Railway—The Valve Gear. Illustrates and describes the valve gear of the latest passenger engine for this line. 500 w. Engr, Lond—Sept. 20, 1907. No. 87348 A.

Valves and Valve Gearing for Superheated Steam Locomotives. Illustrates and describes two locomotives in service on the Prussian State Railways, fitted with the Lentz system of poppet valves. 1700 w. Mech Engr—Feb. 2, 1907. No. 82237 A.

Locomotive Piston Valves. Hal R. Stafford. Gives a brief account of the earlier applications of the piston valve to the locomotive, and discusses their advantages and disadvantages. Ills. 3000 w. Am Engr & R R Jour—May, 1907. No. 84093 C.

## Water Purification.

Railway Water-Softening. An abstract of the more important sections of the report of the Committee on Water Service, presented at the convention of the Am. Ry. Engng. & Main-of-Way Assn. 2700 w. Eng Rec—April 20, 1907. No. 83838.

## NEW PROJECTS

## Alaska

The Purification of Water (Note sur l'Épuration des Eaux). M. H. Boileau. Methods employed to purify boiler-feed water containing sulphur and magnesium chloride by the Phosphate and Railway Company of Gafsa, Tunis (la Compagnie des Phosphates et du Chemin de Fer de Gafsa, Tunisie). Ill. 8000 w. Rev Gen d Chem d Fer—March, 1907. No. 83684 G.

## Wheel Pressures.

Greater Loads on Rails. H. V. Wille. Gives accurate data showing the great increase in weight in rolling stock since 1885. 1700 w. Ir Age—Oct. 3, 1907. No. 87379.

Pressure of Locomotive Wheels Against the Rails. George L. Fowler. A report of recent investigations of lateral stresses. 500 w. R R Gaz—Sept. 20, 1907. No. 87910.

Altering Locomotive Wheel Pressures. W. H. Van Druten. Explains a simple method by applying a little elementary mathematics. 1000 w. Am Engr & R R Jour—Feb., 1907. No. 82074 C.

## Wheels.

The Chilled Cast Iron Wheels. W. E. Fowler. Read before the Canadian Ry. Club. Discusses the wearing qualities, design, manufacture, and related matters of interest. 2500 w. Can Engr—March, 1907. No. 82696.

A Traction Wheel with Sinusoidal Tread. Illustrates and describes a wheel invented by Bernhard Beskow, stating the advantages claimed. 800 w. Sci Am—July 13, 1907. No. 85517.

Solid Steel Wheels for Passenger Cars. George L. Fowler. Topical discussion. An interesting account of tests made, and a discussion of the causes of shelling out and of wear. 3000 w. R R Gaz—June 28, 1907. No. 85335.

## NEW PROJECTS

## Africa.

A New Trans-African Railroad from the Atlantic Seaboard to Lake Tanganyika. Illustrated detailed description of an important new line under construction, which will become an important factor in the development of a rich mineral district. 2800 w. Sci Am Sup—March 23, 1907. No. 83154.

The Railways of the Upper Congo. Demetrius C. Boulger. An illustrated account of what the Belgians have accomplished, describing two railways construct-

ed in Central Africa. 3800 w. Engineering Magazine—July, 1907. No. 85307 B.

The Nile Red Sea Railroad. Harold J. Shepstone. Illustrated account of the building of a \$7,000,000 line through a waterless land. 1000 w. Sci Am Sup—July 6, 1907. No. 85416.

See also Cape-Cairo, and South Africa, under NEW PROJECTS:

## Alaska.

The Territory of the Alaska Central Railroad. A. S. Atkinson. Remarks on

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## Alaska

## NEW PROJECTS

## Florida

the development of railroads in Alaska, especially the route of the Alaska Central, and the difficulties, and the rich mineral country through which it passes. 2000 w. R R Gaz—Feb. 15, 1907. No. 82403.

Construction of the Alaska Central Railway, with Cost Data. William G. Atwood. An illustrated account of work done on this road since Jan., 1905. Explains some of the difficulties of railroad construction in a cold country. 3500 w. Eng News—Feb. 21, 1907. No. 82529.

Railway Routes in Alaska. Alfred H. Brooks. A discussion of railway projects, the location of lines, cost per mile, resources to be developed, minerals, agricultural possibilities, etc., showing there is justification for a trunk line railway from the Pacific seaboard to inland points. Maps and illustrations. 7000 w. Nat Geog Mag—March, 1907. No. 83295 C.

## Australia.

Two New Australian Main Line Railways. Discusses the proposed transcontinental railway, 1,100 miles in length; and the main line to develop the northern coast of New South Wales, 311 miles long. 2400 w. Engr, Lond—Feb. 22, 1907. No. 82839 A.

The Great Zig-Zag on the New South Wales Railways. An illustrated description of a scheme to cost £300,000, which will give a new route where traffic can be more easily carried. 500 w. Engr, Lond—March 22, 1907. No. 83428 A.

## Brazil.

The Survey of the Madeira and Mamore R. R. in Brazil. Ernest H. Liebel. Gives a general description of the territory through which the proposed line will pass, and reports the experiences of the engineers on the preliminary exploration survey. 4000 w. Eng News—Oct. 24, 1907. No. 87875.

## Canada.

New Railroad Construction in Canada and the Northwest. Day Allen Willey. Illustrates and describes interesting work in connection with railroad extensions in northwestern Canada. 1000 w. Sci Am—July 6, 1907. No. 85410.

See also Grand Trunk Pacific, under NEW PROJECTS.

## Cape-Cairo.

Cape to Cairo Railway. Sir Lewis Mitchell. An explanation of the aims and objects of this scheme, and interesting information in regard to the line. General discussion. Map. 8500 w. Jour Soc of Arts—Dec. 21, 1906. No. 81327 A.

## Chicago.

Improvements on the Chicago Division of the Cleveland, Cincinnati, Chicago & St. Louis Ry. Maps, profiles, and descriptive account of extensive improvements, including various kinds of work. Also editorial. 6000 w. Eng News—May 16, 1907. No. 84386.

## China.

Construction of the Shan Tung Railway (Allgemeines und Technisches vom Bau der Schantungbahn). Alex Wenz. Description of location and construction of the roadway and bridges of this important link in the Chinese railway system. Ills. 6100 w. Zeitschr d Vereines Deutscher Ingenieure—Jan. 12, 1907. No. 82356 D.

The Great Interior Trunk Line of China. An interesting illustrated account of the construction of the road to connect Peking and Canton. The Peking-Hankow portion is in operation. 2800 w. R R Gaz—June 21, 1907. No. 85174.

## Consolidation.

The Indianapolis Southern Railroad. Illustrated description of a consolidated line formed by a recently built line between Indianapolis and Switz City, Ind., and the Effingham district of the Illinois Central R. R. 2500 w. R R Gaz—March 15, 1907. No. 83058.

## Cut-Offs.

The Bay Shore and Dumbarton Cut-Offs of the Southern Pacific. An illustrated description of these improvements which include the construction of tunnels, improvements of grades and curves, and secures a direct and easier entrance into San Francisco for the trains of the Coast division. 2200 w. R R Gaz—March 15, 1907. No. 83057.

A New Transcontinental Cut-Off for the Southern Pacific and the Santa Fe. Map showing present location of lines and indicating the probable cut-off, with explanatory notes. 2200 w. R R Gaz—Aug. 30, 1907. No. 86661.

The Omaha Cut-Off of the Union Pacific. Illustrated detailed description of the construction work. 1600 w. R R Gaz—Dec. 21, 1906. No. 81208.

The Genesee River Cut-Off of the Erie Railroad. Construction of a low-grade line between Hornell and Cuba is illustrated and described. 3000 w. Eng Rec—March 2, 1907. No. 82738.

## Florida.

The Key West Extension of the Florida East Coast Railway. Illustrated description of a remarkable piece of railroad

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## Florida

building now in progress from Miami to Key West, Fla. 1500 w. Ry Age—April 19, 1907. No. 83846.

Building the Florida East Coast Extension to Key West. F. E. Spooner. An illustrated article giving information in regard to this interesting work and the labor conditions. 2000 w. R R Gaz—April 26, 1907. No. 83926.

Construction of Florida East Coast Railway. Allen Hale. Illustrates and describes interesting phases of this remarkable railroad. 1500 w. Sci Am—May 18, 1907. No. 84392.

Florida East Coast Railway Extension. Howard Egleston. Map, with brief illustrated review of the work done, and an account of the work necessary to complete the line. 1300 w. Engng-Con—Sept. 4, 1907. Serial. 1st part. No. 86831.

## Grand Trunk Pacific.

Location Surveys for the Eastern Half of the Grand Trunk Pacific. An account of the surveys of this new line taken from a recent address by H. D. Lumsden. 2500 w. R R Gaz—March 29, 1907. No. 83326.

## Great Britain.

Current Railway Construction. An account of improvement and extensions in progress on British railways. 2700 w. Engng—March 8, 1907. No. 83118 A.

Current Railway Construction. Notes on the new works in progress in Great Britain and Ireland. 1800 w. Engng—Aug. 23, 1907. No. 86735 A.

Great Central Railway Improvements. Describes the establishing of new connections requiring the widening of a bridge and the construction of a skew span bridge over a mill siding, and other schemes. 1200 w. Engr, Lond—May 31, 1907. No. 84897 A.

New Route Between Bristol and Birmingham. An illustrated description of a new direct route scheme of the Great Western Ry. 2800 w. Engr, Lond—Oct. 11, 1907. No. 87840 A.

## Improvements.

Railway Improvements on Tynesides. Describes and illustrates the work involved in the construction of a new double-line railway, and the difficult task of diverting the main line of the North-Eastern Railway. Ills. 2400 w. Engr, Lond—Jan. 11, 1907. No. 81750 A.

Norfolk & Western Improvement Work. George L. Fowler. Illustrated detailed description of reconstruction, double-tracking, improved grades and alinement. 5000 w. R R Gaz—March 15, 1907. Serial. 1st part. No. 83061.

## NEW PROJECTS

## Northern Pacific

Improvements and Extensions of the Union Pacific During 1906. R. L. Huntley. Map and information of work in Nebraska and Wyoming, including double-tracking, cut-offs, branch extensions, etc. 5400 w. Ry Age—March 22, 1907. No. 83253.

The Pennsylvania Railroad Improvements Between Philadelphia and Baltimore. The principal feature is a new steel and masonry bridge, over the Susquehanna River. Also changes for the elimination of grade crossings, and the reducing of grades and curvature. 1000 w. Eng Rec—March 9, 1907. No. 82861.

Improvement Work on the Southwest System, Pennsylvania Lines. Describes an extension of the double-tracking, elimination of grade crossings, construction of coaling and water stations, etc. Ills. 1800 w. Ry & Engng Rev—March 16, 1907. No. 83091.

Improvements on the P. B. & W. R. R. at Havre de Grace, Md. Illustrates and describes details of this work, especially the new steel and masonry bridge over the Susquehanna River, at Havre de Grace. 1400 w. Ry & Engng Rev—March 23, 1907. No. 83249.

## India.

Indian Railway Property. Information concerning progress on the different lines and recent important undertakings. 1600 w. Engng—July 26, 1907. No. 86177 A.

## Mexican Central.

The Pacific Extension of the Mexican Central Railway. Describes an important piece of railway construction which will open a new port and give connection between the Pacific and Gulf. 3500 w. Eng News—April 4, 1907. No. 83451.

## New Mexico.

The Eastern Railway of New Mexico. Illustrated description of a line to be added to the Santa Fé system, its route, construction, etc. 2000 w. Ry Age—Jan. 18, 1907. No. 81706.

## New York.

The New York Connecting Railroad. Information concerning the proposed facilities for the belt line which will connect the Pennsylvania, New York & Long Island, and the New York, New Haven & Hartford railroads, with a review of the history of the struggle for a franchise from the city. Map. 2800 w. R R Gaz—Dec. 28, 1906. No. 81303.

## Northern Pacific.

The New Tacoma-Tenino Line of the Northern Pacific. H. Cole Estep. An il-

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## N. Y. C. & H. R. R. R.

Illustrated description of this section of the Northern Pacific. 1000 w. R R Gaz—Oct. 11, 1907. No. 87927.

## N. Y. C. & H. R. R. R.

New York Central & Hudson River. Discusses the improvements made during 1906 and 7, the electrification, improved stations, increase in earnings and related matters. 1800 w. R R Gaz—May 3, 1907. No. 84074.

Bronx Improvement of the New York Central. Illustrated description of improvements involving a rearrangement of tracks and the building of a new station at Mott Haven. 1200 w. Ry Age—March 22, 1907. No. 83252.

Yonkers Improvement of the New York Central. Illustrates and describes very extensive changes, including the re-location of tracks, construction of extra tracks, elimination of grade crossings, new station, etc., explaining the conditions to be met. 1800 w. Ry Age—March 22, 1907. No. 83256.

## N. Y., N. H. & H. R. R. R.

New York, New Haven and Hartford Improvement at New Haven. Explains the general features of the improvements, giving illustrated descriptions of types of bridges and other work of interest. 2000 w. Ry Age—Aug. 9, 1907. No. 86336.

The Cut Improvements of the New Haven R. R. at New Haven. Outlines the improvements in progress and illustrates and describes interesting features of the work. 2500 w. Eng Rec—April 13, 1907. No. 83706.

New York, New Haven & Hartford Improvement at Providence. An illustrated description of the construction of a tunnel under the hill upon which Providence, R. I., is situated, and a bridge across the Seekonk river. 2000 w. Ry Age—May 3, 1907. No. 84099.

## Oregon.

Line Changes and Extensions of the Oregon Railroad & Navigation Company's System in Oregon and Washington. W. P. Hardesty. An illustrated account of work recently completed, still under way or authorized. 3500 w. Eng News—May 16, 1907. No. 84384.

## Panama R. R.

The Rebuilding and Double Tracking of the Panama R. R. R. Budd. Illustrated description of the work of rebuilding and double-tracking this railroad. 2000 w. Eng News—June 13, 1907. No. 85022.

## NEW PROJECTS

## St. Paul Pacific

### Philippines.

Progress in the Philippines. From a published interview with Charles A. Conant in regard to proposed extensions of the Manila Railway. 1200 w. R R Gaz—July 19, 1907. No. 85781.

The Railroad Development of the Philippines. P. H. Ashmead. An illustrated account of the progress made in construction, and the industrial effects manifest. 3000 w. Engineering Magazine—Sept., 1907. No. 86607 B.

Philippine Railroad Building with Filipino Builders. Outlines the work and gives an illustrated description of construction work. 3500 w. R R Gaz—Sept. 13, 1907. No. 87909.

### Portland and Seattle.

The Portland & Seattle Railway. H. Cole Estep. Illustrates and describes a road being built to get a direct low-grade freight between eastern Washington and the coast. 2000 w. R R Gaz—Sept. 27, 1907. No. 87917.

### South Africa.

The Amabele - Butterworth Railway, South Africa. Brief description of this new line and its construction. Its length is 78 miles. 1500 w. Eng Rec—Oct. 5, 1907. No. 87445.

### South America.

The Trans-Andine Railroads. Lewis R. Freeman. An interesting illustrated account of difficult railway building, and of the discovery of a new pass through the Andes so open that a broad gauge line can be run through without building a single tunnel. 2500 w. R R Gaz—Aug. 2, 1907. No. 86109.

### Southern Pacific.

The Proposed Klamath Falls Line of the Southern Pacific. Illustrated description of a change of route in northern California and Oregon, which will give relief from heavy grades and curvature. 8000 w. R R Gaz—June 7, 1907. No. 84808.

### Southern Railway.

The Southern's New Line from Jasper, Ind., to French Lick. Illustrated description of the construction of a new line, 24.8 miles in length. 1400 w. R R Gaz—Sept. 6, 1907. No. 87903.

### St. Paul Pacific.

Chicago, Milwaukee & St. Paul's Pacific Coast Extension. Map showing the new route, with an outline of the construction work. 1200 w. Ry Age—Dec. 14, 1906. No. 81042.



## RAILWAY ENGINEERING

### Tehuantepec

### PERMANENT WAY AND BUILDINGS

### Coaling Plants

#### Tehuantepec.

The Tehuantepec National Railway. Late facts in regard to the present state of this route which will give a line of communication between the Atlantic and Pacific, and its connections with steamships on both oceans. Two maps. 2500 w. R R Gaz—Nov. 9, 1906. No. 80330.

The Tehuantepec Railway of Mexico. Gilbert Cunningham Terry. An illustrated account of the physical features and equipment of the line and a study of its apparently very important influence in changing the future course of trans-Isthmian traffic. 4000 w. Engineering Magazine—Jan. 1, 1907. No. 81195 B.

The Tehuantepec Railway and Terminal Ports. An illustrated description of the railway and the terminal harbors at Salina Cruz and Coatzacoalcos. 4000 w. Engr, Lond—Feb. 1, 1907. No. 82258 A.

The New Tehuantepec Railroad (Le nouveau Chemin de Fer de l'Isthme de Tehuantepec). A. Dumas. The history of the project, a description of the country through which the line passes, the harbour works at the terminals and other related matters. Ill. 3200 w. Génie Civil—Feb. 16, 1907. No. 82893 D.

The Tehuantepec National Railway. Illustrated description of this reconstructed railway in Mexico, connecting ports on

the Gulf of Mexico and on the Pacific Ocean, with information relating to it. 3000 w. Eng Rec—June 22, 1907. No. 85196.

#### Virginia.

The Tidewater-Deepwater Railway. Begins an illustrated description of a line under construction to carry coal from the mines of West Virginia to tidewater at Norfolk. 1200 w. Ry Age—Nov. 23, 1906. Serial. 1st part. No. 80701.

The Deepwater and Tidewater Railways. Begins an illustrated detailed description of the location, standards adopted and construction methods employed for this new trunk line which will connect the W. Va. coalfields with tidewater near Norfolk, Va. 5500 w. Eng Rec—Dec. 15, 1906. Serial. 1st part. No. 80990.

The Tidewater and the Deepwater Railways. Maps and illustrated description of this line which will connect the West Virginia coalfields with tide water at Norfolk, Va. 9300 w. R R Gaz—March 15, 1907. No. 83060.

#### Western Pacific.

Engineering Features of the Western Pacific Railway. George P. Low. Map, profile, and illustrations, with description. 4500 w. Eng Rec—Sept. 28, 1907. No. 87304.

## PERMANENT WAY AND BUILDINGS

### American.

American Railroads (Note sur les Voies Américaines). M. Descubes. Discusses rails, ties, methods of laying track, and other details of the roadbeds of American railways and compares with European practice. Ill. 3500 w. Rev Gen des Chem de Fer—Feb., 1907. No. 82992 G.

### Bridges.

See under CIVIL ENGINEERING, BRIDGES.

### Bumping Posts.

New Bumping Posts for the Lackawanna. Illustrated description of the standard concrete bumping-posts adopted by this road for use in freight yards. 600 w. Ry Age—Dec. 21, 1906. No. 81222.

### Car Dumping.

New Car-Dumping Devices (Neuere Wagenkipper). Georg v. Hanffstengel. Illustrated detailed description of three installations for dumping coal and ore

cars bodily, recently developed in Germany. 4400 w. Zeitschr d Ver Deutscher Ing—Sept. 28, 1907. No. 87653 D.

### Coaling Plants.

Coaling Plant with Dredge-Bucket at Cologne Station (Bekohlenanlage mit Greifer auf dem Bahnhof Köln). C. Guillery. A coaling plant mounted on a traveler and provided with a drop bucket. Illus. 1500 w. Zeitschrift des Vereines Deutscher Ingenieure—Feb. 23, 1907. No. 82919 D.

The Coaling Station of the Pennsylvania Railroad at Morrisville. Describes a structure of steel and reinforced concrete. 1000 w. Eng Rec—April 27, 1907. No. 83942.

Reinforced Concrete Coal Trestle Pocket. George T. Hand. Illustrates and describes a retail coal trestle pocket, constructed entirely of reinforced concrete, recently completed at Murray Hill, N. J., on a branch of the D. L. & W. R. R. 1500 w. Ry Age—Nov. 30, 1906. No. 80791.

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### Coal Yard

See also Coaling Tower and Reinforced Concrete, under CIVIL ENGINEERING, CONSTRUCTION.

### Coal Yard.

The Coal Yard at Cologne Station (Eifeltor). C. Guillery. Trans. from *Zeit. des Ver. deut. Ing.* Illustrated description of a plant for the supply of coal to locomotives. 2000 w. *Bul Int Ry Cong*—Aug., 1907. No. 86851 E.

### Construction.

The Construction of the Chihuahua & Pacific Railroad. F. Lavis. An illustrated description of the work on the first section of this Mexican railway, which is extremely well built. 2800 w. *Eng Rec*—March 2, 1907. No. 82712.

Railway Construction in Difficult Country. Information from report of Henry Deane concerning the construction and operation of railways in mountainous country. 3000 w. *Ry & Engng Rev*—April 20, 1907. No. 83849.

Construction and Maintenance of Way. W. H. Hoyt. Discusses the important features of construction and maintenance of roadway and improvements in track construction. 2500 w. *Engrs' Soc of Univ of Minn—Year Book*, 1907. No. 84630 N.

Permanent Way; Its Construction and Maintenance. Arthur John Grinling. Discusses the details and construction of permanent way, the keeping of the line in repair and the renewal of defective and worn-out material. 4200 w. *Inst of Civ Engrs*, No. 555—No. 84458 N.

See also Excavation, Filling, Scraper Work and Steam Shovel Work, under CIVIL ENGINEERING, CONSTRUCTION; and Railway Construction, under INDUSTRIAL ECONOMY.

### Culverts.

A Method of Tunneling High Railroad Embankments for Culverts. Describes reinforced concrete culverts built in tunnels driven through the embankments. Ills. 1500 w. *Eng Rec*—Sept. 7, 1907. No. 86791.

See also same title, under CIVIL ENGINEERING, CONSTRUCTION.

### Curves.

The Theory of Transition Curves (Zur Theorie des Uebergangsbogens). Alfred Wessely. Mathematical discussion of transition curves between tangents and circular curves on railways, and of superelevation of the outer rail. Diagrams and tables. 2000 w. *Zeitschr d Oest Ing u Arch Ver*—Nov. 9, 1906. No. 80624 D.

### PERMANENT WAY AND BUILDINGS

### Engine House

A Unit Table for Talbot's Spiral. Gives a table, based on Talbot's Spiral, compiled by G. A. Kyle, adapted to any length up to 400 ft. varying by whole feet. 3000 w. *Eng Rec*—Sept. 7, 1907. No. 86788.

Setting Out Curves. Thomas G. Bocking. Gives a simple rule and a table of tangential angles calculated upon it. 800 w. *Engr, Lond*—May 17, 1907. No. 84583 A.

Centrifugal Force on Curves and Its Resistance by Track. A study of the problem of track strength on curves made in connection with investigations of the recent accident on the New York Central Ills. 1200 w. *Eng Rec*—March 16, 1907. No. 83068.

Stresses in Tracks on Curves. A study of the mechanics of curve resistance, giving an outline of the calculations. 1700 w. *R R Gaz*—March 15, 1907. No. 83056.

Moment of Inertia and Curvature. G. R. Henderson. A study of the effect of the moment of inertia of an engine in being rotated about a vertical axis when entering a curve. Diagram. 2000 w. *R R Gaz*—June 7, 1907. No. 84809.

The Relation of Locomotive Wheel Base to Track Curvature. George R. Henderson. A discussion of the effect of rigid wheel base and the corresponding clearances. 1200 w. *Ry Age*—March 8, 1907. No. 82873.

The Strain on Curve Spikes. An Abstract of the report of Prof. George F. Swain of computations made in a study of this subject. 2500 w. *St Ry Jour*—March 30, 1907. No. 83362.

See also Spikes, under PERMANENT WAY AND BUILDINGS; and Derailments, under CONDUCTING TRANSPORTATION.

### Detours.

The Economics of Detour Building—A Comparison Between Wellington and Prof. Webb. Morrell W. Gaines. 1200 w. *Ry Age*—July 19, 1907. No. 85821.

### Earth Slides.

Earth Slides. From a bulletin contributed by H. Rohwer, to the Am. Ry Engng. & Main. of Way Assn. Describes slides coming to the notice of the writer and the remedies. 1700 w. *Eng Rec*—Oct. 5, 1907. No. 87446.

### Engine House.

An English Rectangular Engine House with Radial Tracks. Illustrated description of an engine house recently built at London, England, by the Great Western Ry. which is notable for the number of locomotives accommodated and the arrangement of the stalls. 1000 w. *Eng News*—June 13, 1907. No. 85025.

# RAILWAY ENGINEERING

## Four-Tracking

## PERMANENT WAY AND BUILDINGS

## Maintenance

### Four-Tracking.

Changing from Double to Quadruple Track (Transformation en Quadruple Voie de la Double Voie de Paris à Creil par Chantilly). M. Rossignol. Illustrated description of the work of tearing down the old masonry overhead crossings without interfering with traffic. Ill. 2200 w. Rev Gen d Chem d Fer—March, 1907. No. 83690 G.

### Four-Track Line.

The New Four-Track Line of the Erie R. R. Through Bergen Hill, Jersey City. Explains the difficulties in the way of railway lines from the west which reach New York City, and describes the new construction work in progress by the Erie R. R. Ills. 1700 w. Eng News—Feb. 21, 1907. No. 82532.

### Freight Stations.

The New Express-Freight Station of the Northern Ry. of France, at Paris (Note sur la Nouvelle Halle des Messageries de la Compagnie du Chemin de Fer du Nord). D. Dupuis. Illustrated description of station and methods of handling express freight and postal parcels. 2 plates. 3500 w. Rev Gén des Chemins de Fer—Dec., 1906. No. 81131 G.

Remarks on Freight Stations in North America (Einige Bemerkungen über die Güterbahnhofe in Nordamerika). Herrn Blum and E. Giese. Illustrates and describes freight terminal arrangements in several of the leading cities of the United States. 6000 w. Serial. 2 parts. Zeitschr d Ver Deutscher Ing—May 11 and 25, 1907. No. 84980 each D.

### Gage.

Changing the Gage on the Louisville & Nashville. Reuben Wells. Describes the changing of gage from 5 ft. to standard (4 ft. 8½ in.) which was done in 1886. Diagrams. 2800 w. R R Gaz—June 7, 1907. No. 84804.

### Grade Crossings.

Elimination of Grade Crossings in New York Central Electric Zone. Illustrates and describes the High Bridge and Morris Heights stations where overhead bridges are used. 1500 w. Eng Rec—Sept. 7, 1907. No. 86790.

### Grades.

Uniformity of Requirement and Clearness of Specification in Agreements for the Graduation of Railroads. W. F. Dennis. Considers some of the matters covered in contracts for graduation. 12400 w. Pro Am Soc of Civ Engrs—Jan., 1907. No. 81912 E.

Value of Grade Reductions. William G. Raymond. Gives a statement of the problem and three methods of determining the result. 1000 w. R R Gaz—May 3, 1907. No. 84077.

### Improvements.

The Value of Railroad Improvements. Morrell W. Gaines. An examination of money earnings from increased train loads, giving a short résumé of the course of traffic and operating conditions since the early eighties. 4000 w. Engineering Magazine—Sept., 1907. No. 86605 B.

### Lighting.

Lighting of Railway Premises: Indoor and Outdoor. Henry Fowler. Gives examples of work on English railways where gas and oil are used for lighting, with remarks on electric lighting for this purpose. Ills. 9000 w. Inst of Mech Engrs—Dec. 14, 1906. No. 81262 D.

### Location.

Economics of Railway Location. Abstract of a report presented at meeting of the Am. Ry. Engng. & Main.-of-Way Assn., with editorial. 4000 w. R R Gaz—April 19, 1907. No. 83827.

### Maintenance.

The Foreman—His Training, Work, and Relation to Railroad Maintenance of Way Organization. S. W. Kapp. Briefly discusses the points named. 5600 w. Pro Engrs' Club of Phila—Oct., 1906. No. 80235 D.

Maintenance of Way. F. O. Dufour. Discusses the permanent way from an economical standpoint, pointing out defects and suggesting remedies. 5500 w. Pro St Louis Ry Club—April 12, 1907. No. 83959.

Railway Maintenance of Way. Walter K. Hardt. Discusses the elements that influence the costs of keeping the property up to a proper standard, and the lack of significance of figures as a basis of comparison. 3800 w. Jour of Accountancy—April, 1907. No. 83587 C.

A Technical and Economic Consideration of Materials for Maintenance of Way (Sullo Studio Tecnico ed Economico dei Materiali di Manutenzione dell Massicciate Stradali). 1500 w. Serial. 1st part. Rivista Gen delle Ferrovie—July 28, 1907. No. 86217 D.

The Engineering and Maintenance of Way Association Convention. Abstracts of discussions, reports, and general business. 7000 w. R R Gaz—March 29, 1907. No. 83325.

See also Construction, under PERMANENT WAY AND BUILDINGS.

# RAILWAY ENGINEERING

## Maintenance Plants

## PERMANENT WAY AND BUILDINGS

## Rails

### Maintenance Plants.

The Electrical Maintenance Plants of the New York Central & Hudson River Railroad Company. Illustrated detailed description of the shop construction of an electrified steam railroad, which is to care for the rolling stock used in the New York electric zone. 3500 w. St Ry Jour—June 8, 1907. No. 84843.

### Oil House.

Oil House. Illustrated description of the oil house of the D., L. & W. Ry. at Scranton, Pa. 1000 w. Ry Mas Mech—Nov., 1906. No. 80371.

### Otavi.

The Otavi Railway (Die Otavi-Bahn). M. Wechsler. Description of the location, construction, permanent way and rolling stock of a line recently opened in German Southwest Africa. Illus. 1 plate. Serial. 2 parts. 7800 w. Zeitschrift des Vereines Deutscher Ingenieure—Feb. 9 and 23, 1907. No. 82921 each D.

The Southwest African Railway. Dr. Alfred Gradenwitz. An illustrated account of the construction of the Otavi Railway, which is about 360 miles in length. 900 w. Sci Am Sup—Feb. 23, 1907. No. 82577.

The Otavi Railway in South Africa. The Longest 24 in. Gage Railway in the World. Illustrates and describes a recently completed road of light construction. 2000 w. Eng News—Oct. 10, 1907. No. 87548.

The Longest Narrow-Gauge Light Railway in the World. An illustrated detailed description of the Otavi Railway, in German South-West Africa, and its rolling-stock. 2500 w. Engng—July 19, 1907. No. 85991 A.

### Rail Fastenings.

On the Working Loose of Screws When Used as Rail Fastenings. L. Schlüssel. Analyzes the behavior of the screw under the influence of unsymmetrical loads, and attempts to deduce a method for preventing such loosening. 6500 w. Bul Int Ry Cong—Jan., 1907. No. 82545 E.

### Rails.

Breakages of Steel Rails. Robert Job. An illustrated article discussing some of the defects in steel rails, and the manner in which they may be discovered by inspection, and prevented in the course of manufacture. 3000 w. Cassier's Mag—May, 1907. No. 84053 B.

The Peril of the "Broken Rail"—Its Cause and Cure. Reports results of an investigation recently made by the editor,

giving a statement of past and present conditions of rail making, and concluding that it is necessary to abandon the Bessemer process and adopt the Open Hearth process and return to slower methods of manufacture. Ills. 2500 w. Sci Am—May 18, 1907. No. 84391.

The Rail Situation. J. Kent Smith. Discusses the causes of rail fracture and the value of vanadium and the open-hearth process. 1000 w. Sci Am—July 20, 1907. No. 85740.

Rail Fractures on Railways in New York State. Information from a bulletin of the New York State Railroad Commission showing the total number of rail breaks on the principal steam railways of the state during the winter months, January to March, of the last three years. 900 w. Eng News—May 2, 1907. No. 84045.

Defective Rails. A collection of unsigned letters concerning the quality of the rails furnished by the steel companies, with editorial comment. Ills. 6500 w. R R Gaz—May 17, 1907. No. 84382.

Concerning Rail Metal. Letters and editorial discussing the cause of breakage of steel rails and the remedy. 3000 w. Elec-Chem & Met Ind—June, 1907. No. 84777 C.

How May Quality of Steel Rails Be Improved? Henry M. Howe. Remarks on the frequent breakages of Bessemer steel rails, suggesting improvements in process of manufacture to prevent failures. 2800 w. Eng & Min Jour—July 6, 1907. No. 85452.

Steel Rails of Better Quality. Robert Job. Discusses the need of better rails to meet changed conditions, and considers the latest specifications proposed by the American Society for Testing Materials. 2000 w. Ir Age—Aug. 22, 1907. No. 86500.

The Manufacture of Steel Rails. James C. Bayles. A discussion from the viewpoint of the rail maker, considering the influence of the dry blast in Bessemer steel practice. 3000 w. Cassier's Mag—July, 1907. No. 85709 B.

Open Hearth Steel Rails. Benjamin Talbot. Read before the Am. Soc. for Test. Mat. Gives results from the continuous open hearth process. 1500 w. Ir Age—June 27, 1907. No. 85294.

Proposed Use of Vanadium in Rail Metal. B. de Alzuaray, in the New York Commercial. Discusses the causes of rail breakage and the proposed remedies, advocating the introduction into the manufacture of steel of a suitable portion of ferro-vanadium alloy. 700 w. Ry & Engng Rev—May 18, 1907. No. 84398.

# RAILWAY ENGINEERING

## Rails

## PERMANENT WAY AND BUILDINGS

## Spikes

Notes on Recent Rail Design. A letter from P. H. Dudley in regard to developments and experience in rail manufacture within recent years. 1600 w. Eng News—July 25, 1907. No. 85888.

Note on the Wear of Rails. Léon de Lubimoff. Aims to determine what relation exists between the hardness of rail steel and its mechanical properties. Ills. 3800 w. Bul Int Ry Cong—April, 1907. No. 84522 E.

The Action Between Wheel and Rail. H. R. A. Mallock. Read before the Engng. Con. of the Inst. of Civ. Engrs. Considers the mutual action between the rails and wheels from the theoretical point of view. Discussion. 2500 w. Elect'n, Lond—June 21, 1907. No. 85392 A.

Wheel-Loads and Rail-Weights. George Sherwood Hodgins. Shows the interrelation of rail weight and wheel load, giving a comparison of the rise and fall of rail sections with the development of the locomotive. Ills. 2500 w. Cassier's Mag—Oct., 1907. No. 87386 B.

Comparison of American and Foreign Rail Specifications, with a Proposed Standard Specification to Cover American Rails Rolled for Export. Discussion of the paper of Albert Ladd Colby. 8000 w. Bul Am Inst of Min Engrs—Jan., 1907. No. 82516 C.

Standard Specifications for Steel Rails. Recommended by the Committee of the Am. Soc. for Testing Materials. 1200 w. Eng Rec—June 29, 1907. No. 85327.

The Steel Rail Discussion, American Society for Testing Materials. 9000 w. Ry & Engng Rev—June 29, 1907. No. 85360.

Continuous Rails for Uniform Track Structure. Editorial discussion of the difficulties and conditions, and the appliances to meet the requirements. 1800 w. R R Gaz—April 12, 1907. No. 83573.

Mechanical Experiences with Limber and Stiff Rail Sections. P. H. Dudley. Read before the Am. Soc. for Test. Materials. An illustrated article giving valuable information in regard to rails, the physical properties of the metal, etc. 3000 w. Ir Trd Rev—July 4, 1907. No. 85437.

See also same title, under MECHANICAL ENGINEERING, MATERIALS OF CONSTRUCTION.

## Reinforced Concrete.

Reinforced Concrete for Railway Purposes (Die Anwendung des Eisenbetonbaues für Eisenbahnzwecke). Herr Labes. Address to the German Railway

Society, Berlin. 3500 w. Glaser's Annalen—Dec. 1, 1906. No. 81815 D.

## River Encroachments.

Struggle of the Chicago & Alton Against the Encroachments of the Missouri River. An illustrated account of the changes due to the vagaries of the river, and the works constructed at different points for the protection of the banks. 2000 w. Ry Age—Jan. 25, 1907. No. 82005.

## Roadbed.

The Roadbed of the Future. J. W. Schaub. Presents the advantages of concrete in securing both economy and comfort. Ills. 1700 w. Cement Age—Jan., 1907. No. 81797.

Some Roadbed and Track Standards, N. Y. C. & H. R. R. R. Illustrated detailed description of the construction of the four-track lines. 1400 w. Ry & Engng Rev—April 20, 1907. No. 83848.

Pennsylvania Standard Roadway. Brief illustrated description of the standard adopted, and which is being constructed on the main line. 800 w. Ry Age—Feb. 1, 1907. No. 82076.

## Round-House.

Round-House with Crane Service. An illustrated detailed description of a new round-house at Pueblo, Colo., on the Denver & Rio Grande R. R. 1000 w. Ry Mas Mech—Dec., 1906. Serial. 1st part. No. 80964.

See also Engine House and Terminals, under PERMANENT WAY AND BUILDINGS.

## Scales.

The Standard Track Scale. Illustration and brief description of a 600-ton suspension steel frame scale. 700 w. Ir Age—Oct. 3, 1907. No. 87378.

## Shan Tun.

Construction of the Shan Tun Railway (Vom Bau der Shantung-Eisenbahn). Hermann Meyer. General description of location, permanent way and bridges of a new railway traversing the province of Shan Tun in eastern China. Illus. Serial. 1st part. 2100 w. Deutsche Bauzeitung—Feb. 16, 1907. No. 83634 D.

## Simplon.

The Italian Approaches to the Simplon Tunnel. Brief review of the negotiations which made this work possible, illustrating and describing the approaches on the Italian side. 3800 w. Engng—July 26, 1907. Serial. 1st part. No. 86175 A.

## Spikes.

Holding Power of Railroad Spikes.

# RAILWAY ENGINEERING

## Spikes

## PERMANENT WAY AND BUILDINGS

## Stations

R. I. Webber. A report of a series of experiments to determine the resistance to withdrawal, and also to determine whether the preservative has any influence upon this resistance. 5000 w. Ry Age—Dec. 14, 1906. No. 81044.

Holding Force of Railroad Spikes in Wooden Ties. A report to the U. S. Dept. of Agriculture by W. Kendrick Hatt. Reports tests made to compare the relative holding force of common, channeled, and screw spikes when driven into railroad ties of both hard and soft woods. 1000 w. R R Gaz—April 26, 1907. No. 83924.

Holding Power of Railroad Spikes. Roy I. Webber. From Bul. No. 6 of the Univ. of Ills. Engng. Exp. Station. Report of a series of experiments made to determine the resistance to withdrawal of the same type of spike in different timbers, and of different spikes in the same timber, and whether the preservative has any influence. Ills. 7500 w. R R Gaz—Aug. 9, 1907. No. 86191.

See also Curves, under PERMANENT WAY AND BUILDINGS.

## Stations.

The New Goods Station at Newcastle. Illustrated description of an example of monolithic ferro-concrete construction, built by the North-Eastern Ry. Co. 4000 w. Engr, Lond—Oct. 26, 1906. No. 80309 A.

New Union Station at Seattle. Illustrated description of a recently completed and very beautiful station. 700 w. Ry & Engng Rev—Jan. 19, 1907. No. 81708.

The New Union Station at Lexington, Kentucky. Illustration and plan, with description. 800 w. R R Gaz—Jan. 18, 1907. No. 81686.

Washington's Great Union Station. Frank N. Bauskett. Illustrated description of the beautiful station nearing completion, calling attention to points of special interest in the construction. 1000 w. Sci Am Sup—Jan. 19, 1907. No. 81691.

Proposed Union Station, Toronto, Canada. Illustrated description of a proposed passenger station building, including baggage buildings and service plant. 1000 w. Ry Age—Feb. 15, 1907. No. 82429.

Proposed New Union Station at Toronto. Illustrated description of a station for use of the Grand Trunk and the Canadian Pacific railways. 1800 w. R R Gaz—May 24, 1907. No. 84542.

Rearrangement of the Leipzig Stations of the Saxon State Railway. E. Toller.

Trans. from the *Organ für die Fert des Eisenbahn*. Explains the conditions that made the work necessary and the changes proposed. 3500 w. Bul Int Ry Cong—March, 1907. No. 83598 E.

New Passenger Station of the Lackawanna at Scranton, Pa. Illustrated description of a fine structure about to be erected. 600 w. Ry Age—April 19, 1907. No. 83847.

Tunnel in Watergraasmeer Sorting Station in Amsterdam (Tunnel im Rangierbahnhofe der Holländischen Eisenbahn—Gesellschaft in Watergraasmeer bei Amsterdam). H. Masereeuw. Mathematical treatment of the design to be executed in concrete. 2300 w. Serial. 1st part. Beton und Eisen—March, 1907. No. 83647 F.

The Reconstruction of the Valenciennes Station (La Reconstruction de la Gare de Valenciennes). MM. Cossmann and E. Despono. The first number of the serial discusses the history of the Valenciennes station of the Northern Railway of France, and describes the general arrangement of the tracks, buildings and platforms of the new installation. Ills. Serial. 1st part. 3500 w. Rev Gen des Chemins de Fer—May, 1907. No. 84901 G.

Proposed New Union Passenger Station at Buffalo. Map, plans, illustrations, and description of a proposed union station. 1500 w. R R Gaz—July 5, 1907. No. 85469.

Passenger Station of the International and Great Northern at San Antonio, Tex. Illustration and brief description of an attractive station to cost about \$75,000. 400 w. Ry Age—July 26, 1907. No. 85969.

Lausanne Station (La Gare de Lausanne). C. Jambé. A sketch of the development of Lausanne as a railway center and the improvements and extensions made in the yards and station, with a description of further extensions now under way, made necessary by increasing traffic. Ills. Serial. 2 parts. 5200 w. Bull Tech d l Suisse Rom—June 10 and 25, 1907. No. 85610 each D.

The Alterations to Ludgate-Hill Station. Illustrates and describes changes to be made to relieve congested traffic. 700 w. Engr, Lond—Aug. 2, 1907. No. 86367 A.

The Design of Wayside Stations for Single Lines of Railway. Frederick George Royal-Dawson. Considers types of stations designed for India, especially stations designed for the safety of fast trains, and also the development of local traffic. 8300 w. Inst of Civ Engrs, No. 3671. No. 86371 N.

# RAILWAY ENGINEERING

## Stations

## PERMANENT WAY AND BUILDINGS

## Terminals

The Construction and Arrangements of the New German-Russian Frontier Station at Skalmierzyce with Particular Reference to Its Mechanical Equipment (Bau- und Betrieb des Neuen Preussisch-Russischen Grenzbahnhofs Skalmierzyce in Maschinentechnischer Beziehung). Hans A. Martens. Ills. 6000 w. Glaser's Ann—Aug. 15, 1907. No. 86969 D.

The Cost of Four Frame Depots. The first of a series of articles on the cost of railway buildings. Itemized cost of labor and materials will be given, also standard plans and bills of materials. 2000 w. Engng-Con—Aug. 28, 1907. Serial. 1st part. No. 86650.

## Switches.

Switch-Closing Devices and Switch Protection on Main Tracks. Editorial discussion of switch-closing devices, their dangers and advantages, and the protection of trains at turnouts. 2200 w. Eng News—March 28, 1907. No. 83323.

Switches and Turnouts Howard Chapin Ives. The present article presents a study of the frog, the switch, the lead rails on straight main track. 1600 w. Jour Worcester Poly Inst—March, 1907. Serial. 1st part. No. 83277 C.

## Switzerland.

New Permanent Way of the Swiss Railways (Der Neue Oberbau der Schweizer Bundesbahnen). Fritz Hromatka. Description and specifications for roadbed, rails and steel ties. Illus. 2300 w. Oesterr Woch f d Oeffentlichen Bau-dienst—March 23, 1907. No. 83645 D.

## Terminals.

The Theory of the Design of Railway Freight Terminals. H. M. North. Discusses the demands upon a freight terminal yard, the general types, the theory of design, the gravity yard, etc. 10400 w. Jour W Soc of Engrs—Feb., 1907. No. 83187 D.

A Few Points on Railroad Terminals, with Special Reference to Roundhouses. R. E. W. Hagarty. Deals with the general layout of terminal yards and discusses some of the structures. 2500 w. Trans Eng Soc, Univ of Toronto—No. 20. No. 88132 N.

A New Seaport. Ralph H. Rockwood. Illustrates and describes the new tide-water terminal of the Bangor & Aroostook R R., at Stockton Springs, Me. 700 w. Ry Age—Nov. 2, 1906. No. 80236.

Beginning of Erie's Terminal Improvements. Describes work started to improve the eastern terminal of the road at Jersey City, N. J., and to better the

terminal facilities. Plans. 2800 w. Ry Age—Dec. 28, 1906. No. 81323.

The New Lackawanna Terminal. Illustrates and describes features of this terminal which was designed to resist fire and furnish safety to the public. 3000 w. Ins Engng—Nov., 1906. No. 80853 C.

The Opening of the Lackawanna Terminal at Hoboken. Illustrations, and remarks on specifications of this fine terminal. 500 w. Ry Age—March 1, 1907. No. 82707.

The Delaware, Lackawanna and Western Railroad Terminal and Ferry-House at Hoboken, N. J. Kenneth M. Murchison. Illustrated detailed description of this new fireproof structure and its many interesting engineering features. 2000 w. Archts & Builds' Mag—May, 1907. No. 84355 C.

Modernizing Engine Terminals on the B. & O. R. R. Illustrates and describes the engine house and divisional shop facilities under construction at Washington, D. C., and Baltimore, Md., and completed work at Holloway, O. 3000 w. Ry & Engng Rev—Jan. 5, 1907. No. 81467.

The Present Condition of the Railway Terminal at Washington. Illustrated description, showing the progress made. 1800 w. Eng Rec—March 23, 1907. No. 83216.

The Flatbush Avenue Terminal of the Long Island Railroad. Chester A. Crandell. Illustrated detailed description of this common terminus of two distinct subways. 900 w. R R Gaz—March 29, 1907. No. 83327.

Chicago & Western Indiana Engine Terminal. Illustrated description of this new engine terminal, made necessary by the work of track elevation at Chicago. 3300 w. Ry & Engng Rev—March 30, 1907. No. 83374.

Freight Terminal of the Central of New Jersey in the Bronx. Plans and description of the method employed to utilize every available square foot of the restricted ground secured in the vicinity of New York City. 1200 w. Ry Age—May 10, 1907. No. 84284.

The Greenville Terminal of the Pennsylvania R. R. Plan and description of a terminal for freight service under construction just south of Jersey City. 2500 w. Eng Rec—May 11, 1907. No. 84320.

The Hudson Tunnels and Their Terminals. An illustrated article giving interesting information in regard to these tunnels and terminals. 1000 w. Archts & Builds' Mag—May, 1907. No. 84356 C.

# RAILWAY ENGINEERING

## Terminals

The Pennsylvania New Terminal, New York. The first of a series of illustrated articles describing in detail the great engineering work in progress to furnish a station in New York City to serve the Pennsylvania Lines. 2500 w. Engr, Lond—July 19, 1907. Serial. 1st part. No. 86000 A.

Steam and Electric Locomotive Terminals of the New York Central at Croton and North White Plains. Illustrated detailed description of the extensive terminal facilities at these points where the change will be made from steam to electricity. 2000 w. R R Gaz—June 14, 1907. No. 85073.

The Land and Water Terminal of the Seaboard Air Line Railway at Savannah, Ga. Description abstracted from an article by W. Faucette. Plan. 1700 w. Eng News—Aug. 22, 1907. No. 86511.

Proposed Improvement of Passenger and Freight Terminals at Buffalo. Report, with illustrations, of a proposed union passenger station and freight terminals, explaining the complex railroad situation at Buffalo. 3500 w. Ry & Engrg Rev—Aug. 31, 1907. No. 86699.

The Building, Equipment and Operation of the Railway Terminal at Haarlem, Holland (Verbouwing, Inrichting en Exploitatie van het Station, Haarlem). L. C. Westhoff. Address, giving an illustrated description of track work, bridge, viaduct, station, etc., with discussion. 7000 w. Ingenieur—Oct. 27, 1906. No. 80645 D.

New Station, Yard and Terminal Facilities of the Harriman Lines at Salt Lake City. Description with plans and elevations from the architect's drawings. 2000 w. R R Gaz—July 12, 1907. No. 85514.

See also Warehouses and Yards, under PERMANENT WAY AND BUILDINGS.

## Ties.

Cross-Ties Used by Railroads in the United States in 1905. Interesting statistics concerning the number and origin of cross-ties used by steam railroads. 500 w. Ry Age—Nov. 30, 1906. No. 80790.

Cross-Tie Conditions in Some Foreign Countries. Information from various countries, sent in response to a letter sent out. 4000 w. R R Gaz—Jan. 11, 1907. No. 81565.

The Present Outlook for Railway Tie Preserving Processes in the United States. Samuel M. Rowe. Reviews what has been accomplished with zinc chloride and creosote, and outlines some new processes being tried. 2500 w. Eng News—Jan. 17, 1907. No. 81670.

## PERMANENT WAY AND BUILDINGS

## Track Elevation

Treatment of Railroad Ties and the Materials Available for this Purpose in New Jersey, New York, and Pennsylvania. L. Bush. A statement of the difficulties of the tie problem, discussing the financial aspect of the situation. 6000 w. Eng Rec—April 20, 1907. No. 83832.

Experiments with Reinforced Concrete Ties in America. W. M. Camp. Describes some of the experiments made with these ties. Ills. 4000 w. Bul Int Ry Cong—Sept., 1907. No. 87427 E.

Experiments with Concrete Ties. Report of the American Railway Engineering and Maintenance of Way Association which refers to concrete ties. 4000 w. Elec Ry Rev—March 23, 1907. No. 83237.

Kimball Concrete-Steel Ties. Illustrates and describes a type of reinforced-concrete tie now being tested on the Chicago & Alton and the Pere Marquette. 700 w. Ry Age—Sept. 20, 1907. No. 87190.

Practicability and Life of Metal Cross Ties for Railroad Track Construction. H. T. Porter. Gives the writer's experience with such ties. Also discussion. Ills. 8000 w. Pro Ry Club of Pittsburgh—Sept., 1906. No. 80852 C.

Steel Ties in the United States (Versuche mit flusseisernen Querschwellen in den Vereinigten Staaten von Nordamerika). K. A. Müllenhoff. Ties and fastenings described and compared. Illus. 1700 w. Zeitschrift des Vereines Deutscher Ingenieure—Feb. 16, 1907. No. 82927 D.

A Longitudinal Steel Sleeper System for Railroad Tracks. Gustav Lindenthal. Illustrated description of a steel foundation for railroad tracks, being tested on the Pennsylvania R. R. at Pomeroy Station. 1200 w. R R Gaz—March 15, 1907. No. 83059.

See also Timber and Timber Preservation, under CIVIL ENGINEERING, CONSTRUCTION.

## Track Elevation.

The 16th St. Track Elevation of the Burlington at Chicago. Illustrates and describes the elevation of 2.4 miles of track in a very busy section, with construction of additional tracks and other new features. 1800 w. R R Gaz—May 10, 1907. No. 84286.

The Fortieth St. Track Elevation of the Chicago Junction Ry. Illustrated detailed description of track elevation under unusually difficult conditions. 4000 w. Eng Rec—July 13, 1907. No. 85537.

Track Elevation on the Milwaukee Division, Chicago & Northwestern Railway. Brief illustrated description of the work.



# RAILWAY ENGINEERING

## Track Reversal

1000 w. Ry Age—Aug. 16, 1907. No. 86437.

## Track Reversal.

Track Work Involved in the New York Central's Reversal of the Direction of Traffic. Describes the work involved. 1800 w. R R Gaz—Sept. 13, 1907. No. 87908.

## Tracks.

Best Method of Maintaining Track for the Tonnage and Speed of To-day. A committee report presented to the Chicago convention of the Roadmasters' and Maintenance-of-Way Association. Recommendations relating to foundations, drainage, ballast, ties, curves, etc. 2800 w. R R Gaz—Nov. 23, 1906. No. 80572.

A Design for Railway Track, Based Upon a Study of the Stresses Existing in Track Superstructure. O. E. Selby. Abstract of a paper in Bul. 30 of the Am. Ry. Engng. & Main. of Way Assn. Discusses the design of a track structure that will overcome the defects of the present track. Ills. 2000 w. Eng News—Feb. 14, 1907. No. 82294.

A Study of the Stresses Existing in Track Superstructure. O. E. Selby, in Bul. 80 of the Am. Ry. Engng. & Main. of Way Assn. Discusses the unit stresses existing under present conditions, and the requirements for a more durable structure. 3000 w. Eng Rec—March 23, 1907. No. 83214.

Track Deformations and Their Prevention. G. Cuenot. Authorized translation of an account of experimental work undertaken to determine the strength of different kinds of cross-ties, their length, the extent of bed, etc. Also editorial. Ills. 6500 w. R R Gaz—March 15, 1907. No. 83062.

On the Economic Renewal and Maintenance of Railway Tracks for High Speed Traffic. L. Schlüssel. An account of the examination of a Vignoles track, with cramps, wedges, and shock-absorber or deadener blocks. Ills. 12700 w. Bul Int Ry Cong—April, 1907. No. 84520 E.

Construction of Second Track Accompanied by Reduction of Gradient. H. H. Knowlton. Deals with railroads undergoing these changes, and matters relating to their economical construction. 3000 w. Purdue Engng Rev—1907. No. 85934 N.

Notes on English Railway Track. Gives opinions based on a recent examination of railways in England and America. 1800 w. Eng News—Aug. 8, 1907. No. 86310.

## Transfer Bridge.

Electrically Operated Transfer Bridge.

## PERMANENT WAY AND BUILDINGS

## Water Supply

Illustrated description of the transfer bridge of the N. Y. C. & H. R. R. Co., installed at points where freight-cars are transferred from water to land, or land to water. 1000 w. Elec Age—Sept., 1907. No. 87263.

## Trestle.

Niagara Canyon Trestle. Illustrated description of a wooden trestle in British Columbia, which carries the Esquimalt and Nanaimo Railway. It is 585 ft. long and the height is 120 ft. 700 w. Ry & Loc Engng—Feb., 1907. No. 82124 C.

## Tunnels.

See same title, under CIVIL ENGINEERING, CONSTRUCTION.

## Turntables.

Electrically-Operated Traveling Platforms, Turntables and Winches. Dr. Alfred Gradenwitz. Illustrates and describes typical electrically-driven platforms, turntables and winches designed for the Potsdam railway workshops. 800 w. Sci Am Sup—Nov. 3, 1906. No. 80189.

Turntable Deflection. A. A. Kellogg. Gives a graphical method used by the writer for determining deflection. 800 w. Purdue Engng Rev—1907. No. 85933 N.

Standard Turntable Pit: Seaboard Air Line Ry. Philip Aylett. Drawings and description of a pit consisting essentially of a concrete circular wall, in the foundation of which is embedded and bolted the circular rail. 700 w. Eng News—Aug. 15, 1907. No. 86392.

Modern Turntables. Remarks on changes required by the increase in length and weight of locomotives, with illustrated descriptions of recent types for different lines. 1200 w. Ry Age—Sept. 13, 1907. Serial. 1st part. No. 87045.

## Warehouses.

The Terminal Warehouse of the Louisville & Nashville R. R. at Atlanta, Ga. Describes a 5-story reinforced concrete warehouse just completed. 2000 w. Eng Rec—March 2, 1907. No. 82740.

New Terminal Warehouses. Illustrates and describes the construction and equipment of the Illinois Central Railroad Company's building at New Orleans. 3000 w. Ins Engng—June, 1907. No. 85193 C.

## Water Supply.

Water Supply of the Eastern Railway of New Mexico. William Archer. Describes the arrangement for the supply of boiler water along this line. Includes a 100,000-gallon tank, water pumped 1½ miles, distribution by water cars, treat-

# RAILWAY ENGINEERING

## Widening

ment, etc. 3500 w. Ry Age—June 21, 1907. No. 85229.

## Widening.

Widening Operations on the Great Central Railway. An account of extensive improvements on this British railway. 1000 w. Engr, Lond—Oct. 18, 1907. No. 87963 A.

## Yards.

New Bay Shore Yards of the Southern Pacific at San Francisco. Illustrates and describes the yard arrangements at this important terminal. 800 w. R R Gaz—Jan. 4, 1907. No. 81440.

## TRAFFIC

## Car Shortage

Southern Railway Freight Yard at Atlanta, Ga. Plan and illustrated description of a one-hump yard arrangement. 1000 w. Ry Age—May 17, 1907. No. 84397.

The Rutherford Gravity Yard of the Philadelphia & Reading Ry. Illustrated description of the new terminal yard, about five miles east of Harrisburg, Pa. 1500 w. Eng Rec—May 4, 1907. No. 84222.

The Pitcairn Yard of the Pennsylvania Railroad. Plan and description. 4000 w. Eng Rec—Oct. 12, 1907. No. 87569.

## TRAFFIC

### Bills of Lading.

The Uniform Bill of Lading. R. L. Ardrey. Analysis of the hearing before the Interstate Commerce Commission. 2000 w. Ir Age—Nov. 7, 1907. No. 88138.

### Car Efficiency.

Car Efficiency. Addresses by E. B. Boyd, and Arthur Hale, before the Traffic Club of Chicago. 5000 w. R R Gaz—Nov. 1, 1907. No. 88028.

### Car Handling.

Double-Tracking and Yard Improvements to Facilitate Freight Traffic on Railways. Editorial discussion of the freight congestion problem, quoting from recent papers and giving the conclusions reached. 4500 w. Eng News—April 4, 1907. No. 83453.

Delay in Movement of Empty Cars at Terminals. W. E. Beecham. Discusses briefly methods of handling empty cars, especially referring to Chicago, with committee report and discussion of the rules of interchange. 8000 w. Pro W Ry Club—April 16, 1907. No. 84483 C.

The Movement of Freight Cars on American Railways. Abstracts of several recent papers on this subject, with editorial. 12000 w. Eng News—May 23, 1907. No. 84495.

### Car Recording.

A New Method of Car Recording at Local Stations. F. Lincoln Hutchins. Describes a card record system, which has been in use with satisfying results, at the Troy, N. Y., station of the Boston & Maine Railroad, and at other points. 900 w. R R Gaz—Feb. 1, 1907. No. 82077.

### Car Shortage.

A Plan to Relieve Car Shortage and

Congestion. Letter from Russell Harding, giving what he considers the chief causes of car shortage and congestion, and explaining a method of testing the truth of his assertions. 1600 w. R R Gaz—Jan. 18, 1897. No. 81684.

Car Shortage in the Middle West. Some of the causes of car shortage and the trouble it causes in the coal business. 1100 w. Min & Sci Pr—Jan. 12, 1907. No. 81693.

Some Lessons of the Car Famine. Editorial discussion of the present situation in transportation of supplies, with notes from the report of Hon. Franklin K. Lane, summing up the facts, and considering the causes. 2200 w. Eng News—Jan. 17, 1907. No. 81672.

Clearinghouse Idea in Car Service. Editorial discussing the car shortage trouble and the proposed remedy. 1600 w. Ry & Loc Engng—Feb., 1907. No. 82127 C.

I. Is There a Car Famine? P. B. Vermillion. II. Causes and Remedy for Car Shortage. Ashley J. Elliott. Two papers on the causes of car shortage and the handling of equipment, the remedies, etc. General discussion. 7500 w. Pro Iowa Ry Club—Jan. 11, 1907. No. 82268 C.

The Car Shortage Problem. Extracts from the Interstate Commerce Commissioners' report on the causes and remedies. 2200 w. Ir Age—Feb. 21, 1907. No. 82520.

Car Shortage. Arthur Hale. Discusses what is being done, and can be done, to reduce the car shortage. 2400 w. Ry Age—March 1, 1907. No. 82706.

Address of Secretary Moseley to the M. C. B. Convention. Discusses car shortage and matters relating to it. 2500 w. R R Gaz—June 21, 1907. No. 85172.

# RAILWAY ENGINEERING

## Coal Traffic

## TRAFFIC

## Freight Cars

### Coal Traffic.

First Report of the Interstate Commerce Commission on the Coal Traffic. A review of this report which deals with bituminous coal carried east of the Ohio River, and bounded on the south by the Norfolk & Western R. R., and on the north by Canada. 4000 w. R R Gaz—Feb. 1, 1907. No. 82078.

Handling the Coal Output in Southern Illinois. E. Wallace. An illustrated account of a coal-traffic railway also operated as an interurban trolley line. 500 w. Eng & Min Jour—Feb. 23, 1907. No. 82571.

### Co-operation.

Relations Between Shippers and Railways. Abstract of a recent address by P. W. Coyle, to the industrial traffic managers of the Business Men's League of St. Louis, urging co-operation for the removal of present difficulties. 1400 w. Ry Age—July 26, 1907. No. 85970.

### Demurrage.

Reciprocal Demurrage. Editorial on the strong arguments presented by J. M. Daly before the committee of the legislature of Iowa. 1500 w. R R Gaz—March 8, 1907. No. 82801.

Reciprocal Demurrage. E. D. Sewall. An argument against it. Also paper by J. M. Daly, and general discussion. 7000 w. Pro Iowa Ry Club—Feb. 8, 1907. No. 83157 C.

Reciprocal Demurrage. The statement before the committee of the Alabama legislature by Milton H. Smith, explaining the demurrage principle and the reasons why reciprocal demurrage is unfair. 3000 w. R R Gaz—March 8, 1907. No. 82803.

Reciprocal Demurrage. W. Heyward Drayton. Address before the Traffic Bureau of the Illinois Mfrs. Assn. Considers the questions of non-furnishing of cars, and the failure to move a car a specified number of miles per day. 1600 w. Ry Age—Oct. 4, 1907. No. 87495.

The Harriman Lines and Reciprocal Demurrage. Gives a copy of the letter addressed to officers and agents of the Union Pacific, signed by A. L. Mohler, Vice-President and General Manager of the Lines East of Green River. 3000 w. R R Gaz—July 19, 1907. No. 85782.

### Freight.

Losses and Damages to Freight. Robert L. Calkins. A discussion of freight claims by the freight claim agent of the New York Central. 2000 w. Ry Age—March 29, 1907. No. 83376.

Loss and Damage to Freight. An address by Robert L. Calkins before the N.

Y. Traffic Club. Discusses some of the causes of losses and delays and the payment of claims, urging the closer relationship and co-operation between different interests. 1200 w. R R Gaz—Aug. 9, 1907. No. 86192.

Preference Freight. An interesting account of the manner of handling this class of freight. 2500 w. Ry & Engng Rev—Aug. 10, 1907. No. 86337.

The Railroad Situation. Address of W. W. Finley before the American Association of Freight Traffic Officers, at Chicago. 3500 w. Ry & Engng Rev—Sept. 21, 1907. No. 87174.

Freight Handling at the Port of New York. From an article by William S. Root, in *Railroad Men*. An explanation of conditions at this port and the facilities provided for the expeditious handling of freight. 1700 w. R R Gaz—May 3, 1907. No. 84078.

On the Reform of Freight Traffic on the Prussian State Railways (Ueber die Reform des Güterverkehrs auf den Preussischen Staatseisenbahnen). Herr Schwabe. Describes the improvements in rolling stock and in methods of handling freight and conducting transportation which have taken place in recent years. Ills. 6000 w. Zeitschr d Oest Ing u Arch Ver—Aug. 30, 1907. No. 86974 D.

The British System of Cartage and Delivery of Freight at Terminals. An illustrated article showing the methods of the London and North Western Railway, the types of vehicles employed for cartage and the magnitude of the work. 1800 w. R R Gaz—Nov. 23, 1906. No. 80570.

### Freight Cars.

The Interchange Use of Freight Cars in North America. W. F. Allen. Reviews the methods of accounting used and the regulations and agreements suggested. 4500 w. Bul Int Ry Cong—March, 1907. No. 83597 E.

The Freight Car Situation. Report of the Committee on Car Efficiency of the American Railway Association. Information gathered and a discussion of what can be done to improve the situation. 3000 w. R R Gaz—April 26, 1907. No. 83925.

Practical Means for Increasing the Earning Capacity of Freight Cars. J. E. Muhlfeld. Considers the classification of cars, their design, construction, repairs, inspection, loading and unloading, distribution and movement, etc., with reference to the present car shortage. Discussion. 21800 w. Pro Ry Club of Pittsburgh—March 22, 1907. No. 85122 C.

Comparative Summary of Freight Cars in Service on the Railroads of the United

# RAILWAY ENGINEERING

## Freight Rates

States. Table prepared from data contained in the annual reports of most railroads of the United States operating over 500 miles, with comments. 1800 w. R R Gaz—May 17, 1907. No. 84383.

## Freight Rates.

The Transportation Crisis. Lewis M. Haupt. First of a series of papers dealing with railroad development, relative freight rates in the United States and European countries, the danger of restrictive legislation, and the importance of regulating transportation facilities by the improvement of inland waterways. 2300 w. Mfrs' Rec—March 28, 1907. Serial. 1st part. No. 83299.

Do Reductions in Freight Rates Benefit the Masses? From a pamphlet concerning the effects of reductions of freight and passenger rates issued by Joseph M. Brown. Shows that reduction in freight rates brings no benefit to the masses of the people. 4000 w. Ry Age—Oct. 4, 1907. No. 87496.

A Modern Tariff. Gives a recently issued tariff of the New York Central & Hudson River and West Shore railroads, covering charges for special freight train movements. An example of the complicated requirements of the present Interstate Commerce Commission rules for filing tariffs. 1500 w. R R Gaz—May 31, 1907. No. 84669.

An Increase in Freight Rates. Editorial presenting a summary of reasons why freight rates should be increased, and of objections to an increase, with facts presented by men in authority and conclusions. 2200 w. R R Gaz—March 29, 1907. No. 83324.

German Export Railway Rates. Information from a recently issued report. 2200 w. Engng—July 12, 1907. No. 85873 A.

Export Railway Rates in Austria-Hungary, Italy, etc. Particulars concerning the special tariff system of Austria-Hungary, Italy, and one or two other countries. 2000 w. Engng—Sept. 13, 1907. No. 87213 A.

Tonnage Rating. F. W. Thomas. From a paper before the Trav. Engrs. Assn., 1906. Discusses the factors affecting the tonnage hauled. 2500 w. Am Engr & R R Jour—April, 1907. No. 83492 C.

## Freight Traffic.

Science of Freight Transportation. C. L. Bardo. Discusses some of the essentials of good freight transportation. General discussion. 14000 w. Pro N Y R R Club—May 17, 1907. No. 85123.

Watching Freight Traffic by Daily Returns. Describes methods in use on one important British railway and one im-

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portant American railway, comparing the use made of actual working statistics. Also editorial. 5500 w. R R Gaz—Feb. 1, 1907. No. 82079.

Second Conference for the Revision of the International Convention on the Transport of Goods by Railway. A report of the business transacted. 7700 w. Bul Int Ry Cong—Oct., 1906. No. 80393 E.

## Immigrant Traffic.

Handling Immigrant Traffic at the Port of New York. An interesting illustrated article showing the care given immigrants by the government and the officials of the steamship lines and railroads. 3000 w. R R Gaz—March 8, 1907. No. 82804.

## Passenger Rates.

Argument Against Uniform 2-Cent Mileage. Extracts from the argument made by J. M. Johnson, in behalf of the Denver & Rio Grande, in opposition to the Sherman bill providing for the issuance of mileage tickets at 2-cents per mile. 1800 w. Ry Age—Jan. 18, 1907. No. 81707.

Passenger Rate Regulation and the Canadian Parliament. S. J. McLean. A discussion of attempts being made to deal with passenger rates in Canada. 2000 w. R R Gaz—March 8, 1907. No. 82805.

## Problems.

Some Railroad Problems. J. B. Thayer. From an address before the Traffic Club of New York. Discusses rebates, rates, passes, present and proposed legislation, etc. 3500 w. Ry & Engng Rev—Feb. 23, 1907. No. 82560.

## Report.

Final Report of the Pennsylvania Railroad Special Investigating Committee. Abstract of the report of a committee appointed to investigate charges brought against officers and employees. 4500 w. R R Gaz—Feb. 22, 1907. Serial. 1st part. No. 82538.

## Train Loads.

Heavy Freight Trains. Editorial on the growth of car capacity, train loads, etc. 1800 w. R R Gaz—July 12, 1907. No. 85512.

The Profitable Weight and Speed of Freight Trains. M. B. Wild. Editorial letter discussing the economical weight and speed of freight trains. 1000 w. R R Gaz—Feb. 8, 1907. No. 82400.

The Profitable Weight and Speed of Freight Trains. Several letters called forth by the communication by M. B. Wild, discussing the economical weight and speed of freight trains. Also editorial. 6000 w. R R Gaz—Feb. 15, 1907. No. 82401.

# RAILWAY ENGINEERING

## MISCELLANY

### Abandoned Railway

#### Abandoned Railway.

A Railway in Ruins. An illustrated account of the Shrewsbury, Potteries and North Wales Railway. 2000 w. Engr, Lond—April 5, 1907. No. 83750 A.

A Derelict Somersetshire Railway. An illustrated account of a mineral railway abandoned because of the decay of the industry it was built to serve. 1800 w. Engr, Lond—Aug. 9, 1907. No. 86476 A.

#### Accounting.

A Defective Accounting System. Editorial giving objections to the accountant's recommendations adopted by the Interstate Commerce Commission. 1800 w. R R Gaz—June 21, 1907. No. 85171.

#### Algerian Railways.

African Railroads in Algeria and Tunis. From *Moniteur Industriel*. Reviews the history of these lines. 2000 w. R R Gaz—Oct. 4, 1907. No. 87926.

#### Atmospheric System.

Atmospheric Railroad Traction. W. B. Poley. An illustrated description of this system, and an account of the trials made of it from 1840 to 1860. 1500 w. R R Gaz—Feb. 1, 1907. No. 82080.

#### Australian Railways.

Australian Railways (Les Chemins de Fer Australiens). Paul Privat-Deschanel. Gives a history of their development and a general description of permanent way, stations, rolling stock, traffic, new projects, etc. Ills. Serial. 1st part. 5500 w. Génie Civ—Sept. 7, 1907. No. 87609 D.

#### British Railways.

British Railway Economics. Editorial discussion of the returns issued by the Board of Trade. 3000 w. Engng—Oct. 18, 1907. No. 87958 A.

#### D., L. & W. Report.

Delaware, Lackawanna & Western. Reviews the report of this road for 1906. 2000 w. R R Gaz—March 1, 1907. No. 82679.

#### Government Control.

See also same title, under INDUSTRIAL ECONOMY.

#### Government Ownership.

The Costly Mistake of State Railroads. Information given before the Viceregal Commission on Irish Railways is commented upon editorially, with review of E. A. Pratt's book on State Railways, especially in Belgium. 2000 w. R R Gaz—Aug. 9, 1907. No. 86190.

The Purchase of the Western Railway

### Italy

of France. An editorial review of the conditions governing the relations between the railways and the State in France. 2800 w. Engng—March 15, 1907. No. 83468 A.

Secretary Taft's Columbus Speech. Extract concerning railroads and their regulation, with editorial comment. 4200 w. R. R. Gaz—Aug. 23, 1907. No. 86528.

The First Government Railroad in America. An editorial letter, from P. F. Kupka, giving the history of the first state-owned railroad, in Pennsylvania, and its methods. 3500 w. R R Gaz—Jan. 11, 1907. No. 81562.

### Holland.

Reorganization and State Exploitation of Railways (Reorganisatie en Staatsexploitation van Spoorwegen). T. Sanders. A discussion of government ownership in Holland. Ills. 12000 w. De Ingenieur—June 8, 1907. No. 85690 D.

### India.

Notes on Indian Railway Systems. Abstracted from the Indian Government Railway Returns. Information relating to the railway systems, their equipment, operation, etc. 1600 w. Jour Soc of Arts—March 8, 1907. Serial. 1st part. No. 83096 A.

The Railways of British India. A brief review of the progress of Indian railways. 2200 w. Engr, Lond—April 26, 1907. No. 84259 A.

### Italy.

A Glance at Railway Legislation (Uno Sguardo alla Legislazione Ferroviaria). A discussion of recent railway legislation in Italy. 5000 w. Boll Soc Ing e Arch Italiani—May 15, 1907. No. 84918 C.

Italian Government Railways. Thomas F. Millard. A brief review of conditions in Italy, explaining the circumstances which led to the taking over of the railway management by the government, and the results thus far. 1500 w. Ry Age—March 22, 1907. No. 83257.

The Management of the State Railway (L'Ordinamento delle Ferrovie di Stato). A synopsis of the legislation governing the organization and management of the Italian State Railway. 2200 w. Revista Gen d Ferrovie—May 12, 1907. No. 84922 C.

Travel Notes from Italy, Referring Especially to the Milan Exposition, 1906 (Reisebeobachtungen aus Italien und insbesondere von der Mailänder Ausstellung 1906). Herr Cauer. The first part of the serial discusses the transportation facilities

# RAILWAY ENGINEERING

## Japan

ties of the exposition and describes some of the exhibits. Ills. 4500 w. Serial. 1st part. Glaser's Ann.—Sept. 15, 1907. No. 87638 D.

## Japan.

The Development of Japanese Transportation Facilities (Die Entwicklung des Japanischen Verkehrswesens). Dr. Wolff. Describes the progress in extension of railway and steamship lines and gives tables showing the development of commerce and traffic during the past twenty years. 4000 w. Verkehrstech Woche u Eisenbahntechnik Zeitschr.—July 27, 1907. No. 86245 D.

## Legislation.

The Interstate Commerce Act as amended. Frank Haigh Dixon. Abstract from the *Qr. Jour. of Economics*. A review of the new law and the increased authority given the Commission. 2500 w. R R Gaz—Jan. 18, 1907. No. 81682.

Clashes Between Federal and State Authority. Editorial on the recent legislation in the Southern States in regard to railroad rates. 2000 w. R R Gaz—Aug. 23, 1907. No. 86526.

Railroad Legislation in Connecticut. Clarence Deming. A review of the steam and trolley legislation of the session just ended. 1600 w. R R Gaz—Aug. 9, 1907. No. 86195.

Railroad Legislation. George F. Baer. Letter to the Pennsylvania Legislature, giving a statement of the present conditions of railroad transportation. 2800 w. R R Gaz—Feb. 15, 1907. No. 82402.

Railroad Legislation In Pennsylvania. A summary of some of the less important acts recently passed, with some details of the Railroad Commission Law. 1000 w. RR Gaz—Aug. 30, 1907. No. 86658.

The New Haven-Boston & Maine Anti-Merger Law. Editorial discussion of the anti-merger bill and the present situation. 1200 w. R R Gaz—July 12, 1907. No. 85511.

## Mexico.

Mexican Government Railroad High Finance. A review of railroad development and the approaching consolidation into one great system under the control of the national government. 2000 w. R R Gaz—July 19, 1907. No. 85779.

The Railroads of Mexico. Erdis G. Robinson. Reviews their development. The present number describes the resources and topography of the country. 1800 w. R R Gaz—July 12, 1907. Serial. 1st part. No. 85515.

## MISCELLANY.

### New England.

A New England Railroad Situation. An interesting editorial on the present aspects of leading New England lines and the recent changes. 1200 w. R R Gaz—May 3, 1907. No. 84072.

### New Haven Merger.

The New Haven-Boston & Maine System. Gives two maps showing the steam railroad mileage owned by the N. Y., N. H. & H. R. R. and the B. & M. R. R., with remarks on the consolidation. Also editorial. 2000 w. R R Gaz—Aug. 23, 1907. No. 86529.

### New Jersey.

The United Railways of New Jersey. C. H. Caruthers. Reviews the early history of railroad construction and operation in New Jersey, giving illustrated descriptions of the locomotive equipment used, and other matters of interest. 4500 w. R R Gaz—Jan. 11, 1907. No. 81563.

### Reading.

Early Years of the Philadelphia & Reading. C. H. Caruthers. A review of the early history of this line, illustrating and describing early engines used, and other peculiarities of equipment. 7000 w. R R Gaz—July 26, 1907. No. 85904.

### Regulation.

Objects and Effects of State Regulation. From an address by W. W. Finley. A discussion of recent state legislation, quoting opinions of Mr. Knapp, of the Interstate Commerce Commission, and matters bearing on this subject. 2300 w. R R Gaz—May 10, 1907. No. 84289.

Relation of Railways to the Public. W. W. Finley. From an address at Atlanta, Ga. A brief review of transportation conditions in the Southern States, and the policy of the Southern Railway. 5500 w. Ry & Engng Rev—Sept. 7, 1907. No. 86802.

Railroad Regulation. Walker D. Hines. Address before the Traffic Club of New York. Considers the laws already passed sufficient for the correction of every real evil. 2000 w. Ry Age—Sept. 27, 1907. No. 87288.

The Railroad Problem. Robert Mather. From an address before the Chicago Assn. of Commerce. Discusses the subject of state regulation. 5800 w. R R Gaz—Oct. 18, 1907. No. 87930.

Need for Getting Together on the Railroad Situation. J. W. Midgley. The first of a series of letters discussing the present railway situation and suggesting the organization of executive officers. 3300 w. Ry & Engng Rev—June 15, 1907. Serial. 1st part. No. 85087.

## Regulation

## RAILWAY ENGINEERING

### Resistance

J. B. Thayer on Railway Problems. Abstract of an address at Buffalo, N. Y. Examines the reasons advanced for the so-called "regulation of railroads." 2000 w. Ry Age—April 26, 1907. No. 83973.

See also Legislation, under MISCELLANY.

### Resistance.

A Study of Train Resistance. J. G. Van Zandt. A study of the conditions of speed and trains that affect the resistance. 4000 w. Wis Engr—April, 1907. No. 83859 D.

A Discussion of Train Resistance. A short summary of a report made by a Committee of the Am. Ry. Engng. & Main. of Way Assn., indicating the character of the information obtained and the deductions drawn. 4200 w. Eng Rec—May 25, 1907. No. 84563.

### Review.

The Railways in 1905-1906. The results of working the railways during 1905 in France, England and Germany. 6800 w. Bul Int Ry Cong—Aug., 1907. No. 86853 E.

### Union Pacific.

The Growth of the Union Pacific and Its Financial Operations. Thomas War-

### MISCELLANY

ner Mitchell. An account of its organization and reconstruction, its growth and activities. 14000 w. R R Gaz—Sept. 13, 1907. No. 87906.

### U. S. Railroads.

Agitation Against the Railroads. Col. H. G. Prout. An address delivered before the Traffic Club of Pittsburg, on the present attitude of the public toward the railroads. 4000 w. Ry Age—July 12, 1907. No. 85555.

Statistics of the Railways of the United States for 1906. An interesting summary from Poor's Manual, showing the remarkable railway activities. 2500 w. Eng News—Sept. 5, 1907. No. 86758.

After Seven Years. H. Perry Robinson. The first of a series of articles giving some impressions of American railways after long residence abroad. 1600 w. Ry Age—May 10, 1907. Serial. 1st part. No. 84283.

### Water vs. Rail.

The Complementary Nature of Water Transportation as Allied to Transportation by Rail. J. T. Harahan. An address before the deep waterway convention, at Memphis, Tenn. 1700 w. Ry Age—Oct. 11, 1907. No. 87580.

## STREET AND ELECTRIC RAILWAYS

### Acceleration

#### Acceleration.

The Starting Acceleration on Electric Railways (Ueber die Anfahrbeschleunigung bei Elektrischen Bahnen). Dr. W. Kummer. Mathematical discussion of different kinds of acceleration and their effect on passengers. Diagrams. 2000 w. Schweiz Bauzeitung—Nov. 10, 1906. No. 81102 B.

#### Accidents.

A Board of Trade Report on an English Railway Accident: Brakes for Electric Cars on Steep Grades. Reprint, nearly in full, of a report signed by Col. H. A. Yorke, on a runaway of an electric car on a grade, which occurred on June 23, 1906, near Highgate. 6800 w. Eng News—Nov. 22, 1906. No. 80556.

#### Atlantic Shore Line.

Ocean City Extension of the Atlantic City & Shore Railroad. Illustrated detailed description of this new line, recently opened. 1000 w. Elec Ry Rev—July 6, 1907. No. 85440.

The Atlantic Shore Line Railway. Illustrates and describes a recently completed new link between York Beach and Kennebunk, connecting the east and west branches of this system, which has a length of about 100 miles. 3500 w. Elec Ry Rev—Aug. 24, 1907. No. 86565.

#### Austria.

The Open Lines of the New Alpine Railways (Die Offenen Strecken der Neuen Alpenbahnen). J. Zuffer. Describes particularly the permanent way, the tunnels, bridges, etc., giving plan and profile and tables of details of construction. Ills. 4000 w. Zeitschr d Oest Ing u Arch Ver—Aug. 2, 1907. No. 86970 D.

#### Birmingham, Eng.

Birmingham Corporation Tramways. Reviews the history and gives an illustrated description of the overhead electric system of municipal tramways. Map. 7500 w. Tram & Ry Wld—Jan. 10, 1907. No. 81770 B.

#### Boston.

Rapid Transit in Boston and Vicinity. Edward Hungerford. An account of

### Brooklyn

present conditions and the plan for transit relief, extensions and improvements. Ills. 3000 w. Elec Ry Rev—June 1, 1907. No. 84727.

#### Boston-Salem.

The Boston-Salem Interurban Line. Brief illustrated description of a trolley line of interest on account of the substantial roadbed, and improved rolling stock. 1100 w. Elec Ry Rev. Dec., 1906. No. 81049.

#### Brakes.

History of the Grip Brake (Beitrag zur Geschichte der Zangenbremsen). Siegfried Abt. Illustrated description of various forms of brakes which grip the rail, for cable railways and rack railways. Serial. 2 parts. 3500 w. Schweiz Bauzeitung—Dec. 1 and 8, 1906. No. 81104 each B.

The Freund Tramway Brake. Illustrated description of this system which seems to have many practical advantages. 1800 w. Engng—Feb. 15, 1907. No. 82609 A.

See also Air Brakes, under RAILWAY ENGINEERING, MOTIVE POWER AND EQUIPMENT.

#### Brooklyn.

Improvement of the Brighton Beach Line of the Brooklyn Heights Railroad Company. An illustrated description of reconstruction made necessary by the need of eliminating crossings at grade. 2500 w. Elec Ry Rev—Dec., 1906. No. 81045.

The Brighton Beach Improvement of the Brooklyn Heights Railroad. Illustrated description of extensive changes in progress on the line to Coney Island. 1800 w. St Ry Jour—May 11, 1907. No. 84282.

The Franklin Avenue Improvement on the Brighton Beach Line of the Brooklyn Rapid Transit Company. Re-alignment of an elevated section of about 1500 ft., with the erection of a new station, and remodeling of a junction station is illustrated and described. 1200 w. St Ry Jour—June 22, 1907. No. 85209.

The Elevated Shops and Terminals of



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### Brooklyn

the Brooklyn Rapid Transit Company—Organization and General Layout at East New York. An illustrated article dealing with the elevated railway shop, terminal construction and operating practices of this company as developed within the last two years. 3000 w. St Ry Jour—Feb. 2, 1907. Serial. 1st part. No. 82116.

Line and Track Service Plant, Brooklyn Rapid Transit Company. Plans and description of interesting details of an elaborate plant under construction. 1500 w. Elec Ry Rev—Oct. 5, 1907. No. 87482.

The Rehabilitation of the Brooklyn Rapid Transit Company. The first of two articles outlining the reasons for the public hostility toward this company, and considering in detail the efforts being made to give real rapid transit under very hard conditions. Also editorial. Maps. 5500 w. R R Gaz—May 10, 1907. Serial. 1st part. No. 84287.

### Buenos Aires.

The Street Railways of Buenos Aires, Argentina. Gives the most recent statistics in regard to immense traffic on these lines, the style of cars in use, the various types of construction and other data of interest. Ills. 3000 w. St Ry Jour—June 1, 1907. No. 84685.

### Burton & Ashby.

Burton and Ashby Light Railway. Seymour Glendennin. An illustrated description of this electrically operated line. 2500 w. Bul Int Ry Cong—Oct., 1906. No. 80392 E.

Burton and Ashby Light Railway. Illustrated detailed description of the system connecting Burton-upon-Trent with Ashby-de-la-Zouch. 5000 w. Tram & Ry Wld—Nov. 1, 1906. No. 80487 B.

### Cable Truck.

Cable Transport Truck for Street Service. (Kabeltransportwagen für Strassenverkehr). R. Floegel. Convenient design of three wheeled truck, used in Breslau. Illus. 900 w. Glaser's Annalen—Jan. 1, 1907. No. 81818 D.

### California.

The Northern Electric Railway. An illustrated detailed description of an extensive interurban line in northern California, and of its equipment and operation. 2500 w. Elec Ry Rev—June 8, 1907. No. 84868.

### Canada.

- ✓ Electric Railway Development in Eastern Canada. Patrick Dubee. Read before the Canadian St. Ry. Assn. Remarks on the operation of electric railways in a country where climatic conditions are

### Cars

severe in the winter months. 900 w. St Ry Jour—July 6, 1907. No. 85446.

### Canal Haulage.

Electrical Haulage on the Canal D'Aire et de la Duele at Douai. Describes a change recently made in the haulage system on a portion of this canal. The tow-path has been laid with a light railway track and small towing locomotives are used. The method of working is described. 2500 w. Elect'n, Lond—Dec. 21, 1906. No. 81336 A.

### Car Barns.

New Car Barns of the Brooklyn Rapid Transit Company. Illustrated description of barns costing nearly \$800,000. 700 w. Elec Ry Rev—Jan. 12, 1907. No. 81615.

New Car Houses in Baltimore. Illustrated description of the eight car houses, in which special attention has been given to fire protection. 3500 w. St Ry Jour—Feb. 2, 1907. No. 82117.

New Car House and Shops at Nashville. Illustrated description of well-designed buildings for shop and car-storage purposes. 1600 w. Elec Ry Rev—March 2, 1907. No. 82746.

The Broadway Car House of the International Railway Company. Thomas Pumfrey. Illustrates and describes the construction features of this new car house at Buffalo, N. Y. 3000 w. St Ry Jour—March 23, 1907. No. 83236.

See also Reinforced Concrete, under CIVIL ENGINEERING, CONSTRUCTION; and Shops, under STREET AND ELECTRIC RAILWAYS.

### Car Lighting.

Car Lighting. R. C. Taylor. Read before the Cent. Elec. Ry. Assn. Considers the requirements of interurban cars carrying passengers for a long distance; the headlight and also the interior lighting. 2200 w. St Ry Jour—Feb. 2, 1907. No. 82118.

### Car Meters.

Results Obtained by the Use of Car Meters. M. Wattmann. Abbreviated translation of replies received in response to questions sent out, reporting results on the Continent. 5000 w. Elect'n, Lond—May 31, 1907. No. 84883 A.

### Cars.

Service Tests on Columbus City Cars Operated Singly and in Two-Car Trains with Multiple Unit Control. Gives a summary of tests made by the Ohio State University's Department of Electrical Engineering. 2000 w. St Ry Jour—Aug. 31, 1907. No. 86698.

## STREET AND ELECTRIC RAILWAYS

### Cars

Tower and Construction Car of the Philadelphia Rapid Transit Company. Illustrated detailed description. 500 w. St Ry Jour—Dec. 1, 1906. No. 80774.

A Model Car for Long Travel. W. H. Evans. Read before the Cent. Elec. Ry. Assn., Indianapolis, Ind. Presents points where improvements are needed to meet the requirements of long distance interurban service. 2000 w. Elec Ry Rev—Jan. 26, 1907. No. 81967.

Car Equipment of the Vienna-Baden Single Phase A. C. Road. (Der Wagenpark für die Einphasen-Wechselstrom-Bahn Wien-Baden). Illus. 2700 w. Elektrotechnische Zeitschrift—Dec. 13, 1906. No. 81834 B.

The New Car Equipment for the Boston Elevated Railway Company. Illustrates and describes cars embodying the latest developments in the construction of steel passenger coaches. 700 w. St Ry Jour—Jan. 12, 1907. No. 81589.

New Motor Cars for the Metropolitan West Side Railway. Illustrated description of new cars for this Chicago line, which are well adapted to its service and traffic conditions. 1200 w. Elec Ry Rev—Feb. 9, 1907. No. 82217.

The New Steel Cars of the Hudson Companies. Hugh Hazelton. Illustrated detailed description of the rolling stock for lines running in tunnels under the Hudson River, and under city streets. 2200 w. St Ry Jour—June 8, 1907. No. 84844.

Pacific Electric Passenger Cars. Illustrates and describes various types of rolling stock operated by the Pacific Electric Railway Co. of Los Angeles, Cal. 1000 w. Elec Ry Rev—July 20, 1907. No. 85818.

A Radical Design of Semi-Steel Car. Illustrated description of cars for service on interurban systems near Milwaukee. 1200 w. St Ry Jour—Aug. 10, 1907. No. 86320.

Pressed Steel Pay-as-You-Enter Cars for Montreal. Illustrated detailed description of new cars. 800 w. St Ry Jour—Oct. 5, 1907. No. 87492.

Pay-As-You-Enter Cars and Dispatching System in Chicago. An illustrated account of changes to be made in Chicago as given in a report from T. E. Mitten. 2500 w. Elec Ry Rev—Sept. 21, 1907. No. 87172.

Rolling Stock for the Washington, Baltimore & Annapolis Electric Railway. E. P. Roberts. Illustrated description. 2500 w. Elec Ry Rev—Oct. 12, 1907. No. 87579.

### Conduit Systems

See also Equipment, under STREET AND ELECTRIC RAILWAYS.

#### Car Speeds.

Notes on Speed Time Curves. Tracy W. Simpson. An explanation of a method of plotting speed time curves, and a study of the usefulness of such curves for determining important questions. 3500 w. St Ry Jour—Feb. 9, 1907. No. 82216.

#### Car Wiring.

Car Wiring and Piping Practice of the Metropolitan West Side Elevated Railroad, Chicago. Illustrates and describes the wiring and arrangement of apparatus on fifty cars recently put in service. 1400 w. St Ry Jour—June 15, 1907. No. 85065.

#### Catenary Lines.

Catenary Line Construction. C. E. Eveleth. Explains the advantages claimed for this construction. 2000 w. St Ry Jour—Jan. 19, 1907. No. 81705.

Recent Improvements in Catenary Line Construction and Methods of Installation. Gives details of the latest work of the General Electric Co. in line construction, describing designs and methods of installation. 4000 w. St Ry Jour—Oct. 26, 1907. No. 87932.

#### Chicago.

The Union Loop of Chicago and a Proposed Terminal Station System for the Elevated Railways of Chicago. J. B. Strauss. Explains the present conditions and traffic congestion and the proposed remedies. 3500 w. Eng News—Jan. 31, 1907. No. 82022.

Reconstruction of the South Side Elevated Railroad, Chicago. Illustrates and describes the work of changing grade and alignment, and other improvements. 2500 w. Elec Ry Rev—Aug. 31, 1907. No. 86696.

Ravenswood Extension of the Northwestern Elevated Railroad. Illustrated description of a new elevated structure near Chicago. 1000 w. Elec Ry Rev—June 22, 1907. No. 85225.

#### Conduit Systems.

Electric Conduit Street Railroads. C. H. Stut. Discusses the requirements of a good conduit system, especially in reference to the conditions at San Francisco. 1700 w. Cal Jour of Tech—Jan., 1907. No. 82052.

Side Slot Point for Conduit Tramways. Illustrated detailed description of the point, invented by A. N. Connett, for conduit tramways in cases where the slot forms the groove of one rail instead

## STREET AND ELECTRIC RAILWAYS

### Control Apparatus

of being midway between the rails. 900 w. Tram & Ry Wld—Feb. 7, 1907. No. 82589 B.

### Control Apparatus.

Recent Improvements in Control Apparatus for Railway Equipments. F. E. Case. Describes new features of multiple-unit and hand control. 1500 w. St Ry Jour—Oct. 19, 1907. No. 87816.

### Costs.

The Operating Costs and Revenue of Urban Railways. Gerard B. Werner. Gives an analysis of the last annual report of the Interborough Rapid Transit Company of New York City. 2000 w. Engineering Magazine—Aug., 1907. No. 85915 B.

### Counterweight.

Counterweight Device on the Balmain Tramway, Sydney, New South Wales. Percy William Shaw. Describes and illustrates a device used to secure safety and ease in operation on steep gradients. 4000 w. Inst of Civ Engrs—No. 3601. No. 85939 N.

### Couplers.

Standard M. C. B. Couplers for Interurban Cars. Brief illustrated description of the type of coupler used by the Pacific Elec. Ry., Los Angeles, Cal., which is capable of intercoupling with all rolling stock of that or any other system. 700 w. Elec Ry Rev—May 18, 1907. No. 84402.

### Croydon.

Croydon Corporation Tramways. History and illustrated description of these lines and their equipment. 3800 w. Tram & Ry Wld—Oct. 3, 1907. No. 87825 B.

### Curves.

Tables of Car Positions on Curves. George L. Fowler. Gives tables showing angles subtended by cars of different lengths on curves of different radii and distances between bolster centers, and to allow track wheels to swing. 7 tables. necessary distances between inside faces St Ry Jour—Nov. 10, 1906. No. 80322.

### Depreciation.

Accounting of Depreciation by Electric Railways. Robert N. Wallis. Discusses methods used and matters to be considered in electric railway accounting. 2200 w. Jour of Acc—May, 1907. No. 84552 C.

Where Maintenance Ends and Depreciation Begins. J. H. Neal. Read before the Am. St. & Int. Ry. Acc. Assn. Discusses the relations between maintenance and depreciation. 1200 w. St Ry Jour—Oct. 19, 1907. No. 87814.

### Efficiency

✓ Equipment Depreciation and Renewal. William Mahl. Gives statements bearing on equipment renewals and replacements, discussing the difficulties of keeping equipment accounts. 2500 w. R. R. Gaz—Oct. 11, 1907. No. 87928.

### Dispatching.

Dispatching Cars by Telephone, Denver City Tramway. S. W. Cantril. An explanation of the system and a description of the method of dispatching cars by telephone. Ills. 2000 w. Elec Ry Rev—March 2, 1907. No. 82747.

Combined Telegraph and Telephone System Used by the Interurban Railway, Des Moines. Describes a composite system having features of interest for interurban lines, and greatly diminishes the likelihood of a total interruption. 2000 w. St Ry Jour—May 18, 1907. No. 84373.

See also Cars, under STREET AND ELECTRIC RAILWAYS.

### Drop.

Drop in Volts. E. Goolding. Explains a method of finding the drop of volts in track, third rail, or trolley wire of any size or length. 1100 w. Tram & Ry Wld—Feb. 7, 1907. No. 82590 B.

### Earth Currents.

Some Theoretical Notes on the Reduction of Earth Currents from Electric Railway Systems by Means of Negative Feeders. George I. Rhodes. Considers the relative efficiencies of different return feeder systems in reducing stray currents. 1600 w. Pro Am Inst of Elec Engrs—Feb., 1907. No. 83045 D.

### Efficiency.

Relation Between Maintenance of Track and Equipment of Interurban Lines. W. R. W. Griffin. Read before the N. Y. State St. Ry. Assn. An analysis showing that good tracks greatly extend the time of renewal of cars and electrical equipment. 500 w. St Ry Jour—June 29, 1907. No. 85370.

The Effect of the Transmission Line Upon the Reliability and Efficiency of Electric Interurban Railway Service. E. R. Cunningham. Discusses the methods of connecting the transformers and starting the rotary converters in the sub-stations so that a loss of one, or even two, of the transmission wires will not interrupt the service. Also other details affecting the reliability and efficiency. 2500 w. St Ry Jour—July 6, 1907. No. 85444.

The Influence of the Design of Railway Structures on Economy of Operation. H. T. Campion and William McClellan. Notes on materials and design, particular-

## STREET AND ELECTRIC RAILWAYS

### Electric Locomotives

ly in connection with the smaller systems. Ills. 3500 w. St Ry Jour—Oct. 19, 1907. No. 87819.

### Electric Locomotives.

Operation of Electric Locomotives by the New Haven Railroad. On the operation of the combined single-phase, direct-current locomotives. 8500 w. St Ry Jour—Oct. 12, 1907. No. 87779.

The New Electric Locomotive for the Vienna, Austria, City Lines. C. L. Durand. Illustrates and describes the new electric locomotives which will replace the steam locomotives now in use. 3000 w. Elec Rev, N Y—Feb. 2, 1907. No. 82103.

Electric Locomotives for Heavy Service. An illustrated article calling attention to some interesting features of recent American-built machines. 1600 w. Elec Rev, N Y—March 23, 1907. No. 83223.

Electric Freight Locomotive Built by the Brooklyn Rapid Transit Company. Illustrated description of a large electric locomotive to be used for hauling as many as twenty freight cars from South Brooklyn to Coney Island, about 5 miles distant. 900 w. St Ry Jour—March 23, 1907. No. 83234.

New Electric Locomotives of the Boston Elevated Railway Company. Illustrated description of electric locomotives recently designed for heavy yard and general haulage service. 1000 w. St Ry Jour—March 2, 1907. No. 82685.

Three-Phase Locomotive with Three Ranges of Speed for the Italian State Railways. Bela Valatin. Illustrated detailed description. 2000 w. St Ry Jour—April 6, 1907. No. 83476.

Tests of the Ward-Leonard-Oerlikon Electric Locomotive. Reports the results of recent tests of this electric locomotive. Diagrams. 1200 w. St Ry Jour—Dec. 8, 1906. No. 80900.

Electric Towing Locomotive for the Teltow Canal (Ergebnisse eines Betriebsversuches an einer elektrischen Schlepplokomotive beim Teltowkanal). Erich Block. Electric "mule" used on the Teltow canal near Berlin, and running on rails laid on the tow-path. Illus. 1100 w. Glaser's Annalen—Dec. 1, 1906. No. 81813 D.

Single-Phase 20,000-Volt Locomotive for Swedish State Railways. Dr. Alfred Gradenwitz. Illustration with description of the normal-gauge locomotive under trial. 700 w. Prac Engr—Aug. 9, 1907. No. 86451 A.

Metropolitan Railway Electric Locomotives. Illustrated description of the electric locomotives for passenger and freight

### Electric Traction

service on the Metropolitan Railway of London. 1800 w. St Ry Jour—Sept. 7, 1907. No. 86778.

Electric Locomotives of the Pennsylvania Railroad. Illustrated description of the two direct-current locomotives now undergoing tests. 1200 w. R R Gaz—Sept. 20, 1907. No. 87913.

Electric Locomotives. H. L. Kirker. Address before the Grand Trunk Ry. Literary & Scientific Inst. of Port Huron, Mich. 2500 w. Elec Age—Aug., 1907. No. 86703.

Electric Locomotives on Mountain Grades. Editorial discussion of the advantages of electric traction over steam on mountain grades of railways. 1500 w. Eng Rec—Aug. 17, 1907. No. 87233.

See also Canal Haulage, Equipment, Erie R. R., and Mine Haulage, under STREET AND ELECTRIC RAILWAYS.

### Electric Traction.

Electric Traction for Modern High Tension Vehicles. (Abstract). Carl Wegman. Discusses the systems being worked out for the handling of traffic on standard railways, especially the electric locomotives and the necessary details. 2500 w. Can Elec News—Jan., 1907 No. 81917.

Development of Electric Traction (Le Développement de la Traction Electrique). M. De Valbreuze. Discussion of a paper on this subject read before the Société Internationale des Electriciens. Ill. 7500 w. Bul Soc Int d Elecns—Feb., 1907. No. 82981 F.

Development of Electric Traction (Le Développement de la Traction Electrique). DeValbreuze. Account of the development and present state of heavy electric railroading in Europe and the U. S. Ills. 19000 w. Bul de la Soc Int des Electriciens—Jan., 1907. No. 82344 F.

Development in Heavy Electric Traction. A series of short papers by prominent men in the electrical and mechanical world on some phases of heavy electric traction. 15000 w. Pro N Y R R Club—March 25, 1907. No. 83754.

Electric Operation of Main Line Railways from an Agricultural and Strategic Standpoint (Der elektrische Betrieb auf Vollbahnen vom wirtschaftlichen und strategischen Standpunkte). Eugen Cserhati. Discussion of the effect of the operation of the Simplon tunnel by electricity as a strategic feature between Switzerland and Italy. Illus. 4200 w. Zeitschr d Oesterr Ing und Arch Vereines—Feb. 15, 1907. No. 83616 D.

## STREET AND ELECTRIC RAILWAYS

### Electrification

The Philadelphia & Western Railroad. Illustrated detailed description of heavy electric traction for high-speed transportation. 6000 w. *St Ry Jour*—June 15, 1907. No. 85064.

See also Electrification, Rapid Transit, and Trunk Lines, under STREET AND ELECTRIC RAILWAYS.

### Electrification.

Some Remarks Regarding Railway Electrification. Philip Dawson. Discusses the electrification of the London Metropolitan District Railways, showing that other causes than the method of haulage have seriously interfered with the success of these lines. Also considers factors of importance on such systems. 2000 w. *Elec Rev, Lond*—Jan. 18, 1907. No. 81981 A.

A. C. Electrification on the Illinois Traction System. John R. Hewitt. Illustrates and describes the extensive a. c. single-phase lines recently completed and those under construction, with the apparatus employed in their operation. 5500 w. *St Ry Jour*—July 6, 1907. No. 85443.

The Introduction of Electric Traction on the Berlin City, Belt Line, and Suburban Railways (Die Einführung des Elektrischen Zugbetriebes auf den Berliner Stadt-, Ring- und Vorortbahnen). W. Reichel. An exhaustive consideration of the problem of applying electric traction to lines at present operated by steam. Ills. 6000 w. Serial. 1st part. *Zeitschr d Ver Deutscher Ing*—June 22, 1907. No. 85678 D.

The Electrification of the Simplon Tunnel. An interesting illustrated account of this work, the conditions and difficulties. 4000 w. *Engng*—Nov. 23, 1906. No. 80835 A.

Great Western Railway.—Electric Power and Lighting and the Electrification of the Hammersmith & City Railway. Illustrated detailed description of the new electric supply system that has been installed in London. 4500 w. *Elect'n, Lond*—Aug. 2, 1907. Serial. 1st part. No. 86361 A.

Great Western Railway. Illustrated detailed description of the new electric power and lighting system, and the electrification of the Hammersmith and City Railway. 15000 w. *Tram & Ry Wld*—Aug. 1, 1907. No. 86455 B.

The Electrification of the Hammersmith & City Railway Branch of the Great Western Railway. Illustrated detailed description of this recently completed electric traction system in London. 6500 w. *St Ry Jour*—Aug. 3, 1907. No. 86083.

### Expositions

See also same title, under RAILWAY ENGINEERING, MOTIVE POWER AND EQUIPMENT; and Italy, New York Central R. R., and West Shore R. R., under STREET AND ELECTRIC RAILWAYS.

### Equipment.

The Law of Economical Proportion as Applied to Tramway Rolling Stock. William R. Bowker. Deals with the numerical proportioning of different types and sizes of tramway cars. 2000 w. *Cassier's Mag*—June, 1907. No. 85182 B.

The Effect of Topography, Tonnage and Time on Electric Railway Equipment. W. N. Smith. Considers these fundamental elements in their relation to the proportioning electrical equipment to the work to be done. 4500 w. *Sib Jour of Engng*—June, 1907. No. 85134 C.

Freight and Miscellaneous Equipment of the Pacific Electric Company. An illustrated description of the freight equipment and miscellaneous rolling stock. 900 w. *Elec Ry Rev*—July 27, 1907. No. 85966.

Standardization of Electric Railway Equipment. C. B. King. Read before the Canadian St. Ry. Assn. Discusses the wearing parts that could be standardized and so facilitate repairs and lessen expenses. 2500 w. *St Ry Jour*—July 6, 1907. No. 85445.

Electrical Equipment of Main Line Railways in Europe. Philip Dawson. Discusses progress abroad in heavy electric traction, particularly in the field of single-phase motors. Ills. 6800 w. *St Ry Jour*—Oct. 12, 1907. No. 87782.

See also Cars and Electric Locomotives, under STREET AND ELECTRIC RAILWAYS.

### Erie R. R.

Single-Phase Electric Motive Power on the Rochester Division of the Erie Railroad. W. N. Smith. Illustrated detailed description. 9000 w. *Eng Rec*—Oct. 12, 1907. No. 87567.

Single-Phase Electric Traction on the Rochester Division of the Erie R. R. W. N. Smith. Illustrated detailed description of a noteworthy installation on the single-phase system. 9000 w. *Eng News*—Oct. 17, 1907. No. 87738.

### Expositions.

Transportation at the Jamestown Exposition. E. C. Hathaway. Explains the plans for handling the large crowds expected. Ills. 900 w. *St Ry Jour*—April 6, 1907. No. 83478.

The Single-Phase Elevated Railway at

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### Expositions

the Milan Exposition of 1906 (Die Wechselstrom-Hochbahn auf der Internationalen Ausstellung in Mailand 1906). W. A. Müller. Illustrated description of electric railway and equipment on the Finzi system, of standard gauge and with overhead trolley wire, about one mile long. 800 w. Zeitschr d Ver Deutscher—Oct. 27, 1906. No. 80604 D.

Electric Railways at the Milan Exposition (Die elektrischen Bahnen auf der Ausstellung in Mailand 1906). A. Zweifel. Description of European practice as shown by cars, motors, etc., at Milan. Illus. 11400 w. Serial. 1st, 2d and 3d parts. Zeitschrift des Vereines Deutscher Ingenieure—Feb. 2 and 16, and March 2, 1907. No. 82917 each D.

Electric Railway Exhibits at Milan, 1906 (Die elektrischen Bahnen auf der Ausstellung in Mailand 1906). A. Zweifel. Illus. Conclusion of serial. 1800 w. Zeitschr d Ver Deutscher Ingenieure—March 16, 1907. No. 83627 D.

See also Milan Exposition, under RAILWAY ENGINEERING, MOTIVE POWER AND EQUIPMENT.

### Feeders.

The Use of Steel Rails for Electric Railway Feeders. Julius Alsberg. Report of conductivity tools made of various steel rails, both for third rail and service use, with calculations of comparative costs of copper feeders and steel rails. 1500 w. Eng News—Jan. 10, 1907. No. 81560.

Feeder and Return Systems. Henry Docker Jackson. Considers rail bonds, cost of distribution systems, and related matters. 1500 w. Elec Ry Rev—Feb. 9, 1907. No. 82218.

Direct-Current Feeder Calculations for Railways. Explains general principles, equally applicable to alternating-current feeders, giving formulæ. Diagrams. 2200 w. Elec Age—June, 1907. No. 84771 C.

Determining the Size of Feeders. Henry Docker Jackson. Briefly explains methods of calculating used. 1200 w. Elec Ry Rev—Aug. 17, 1907. No. 86442.

See also Railway Feeders, under ELECTRICAL ENGINEERING, DISTRIBUTION.

### Fort Wayne.

Standards of Construction of the Fort Wayne & Wabash Valley Traction Company. An illustrated description of some of the features of an interurban road recently built between Fort Wayne and Bluffton, Ind., as a type of latest practice. 1800 w. St Ry Jour—Dec. 1, 1906. No. 80771.

### History

#### Freight.

Freight-Hauling by Electric Lines. P. P. Crafts. Read before the Iowa St. & Int. Ry. Assn. A discussion of matters relating to interurban freight traffic, showing that it can be made successful. 4000 w. St Ry Jour—April 20, 1907. No. 83831.

Freight Handling at Birmingham, Ala. Gives billing and other forms used to facilitate the handling of shipment in the service between the city and suburban districts. 1000 w. Elec Ry Rev—May 18, 1907. No. 84403.

Light Freight Handling by Electric Lines. P. P. Crafts. Read before the Am. St. & Int. Ry. Assn. Considers methods of making the freight traffic successful. 2500 w. St Ry Jour—Oct. 26, 1907. No. 87933.

Freight Service on Electric Railways. H. H. Polk. Read before the Am. St. & Int. Ry. Assn. Discusses methods, rates, equipment and related matters. 3000 w. St. Ry Jour—Oct. 26, 1907. No. 87934.

#### Frequency.

The Choice of Frequency for Single-Phase Alternating-Current Railway Motors. A. H. Armstrong. Aims to open a discussion on the relative merits of 25-cycles and a lower frequency, briefly considering the advantages and disadvantages of the present, and of any proposed standard. 1700 w. Pro Am Inst of Elec Engrs—July, 1907. No. 86532 D.

Twenty-five versus Fifteen Cycles for Heavy Railways. N. W. Storer. Presents arguments in favor of each, discussing them in detail. 3500 w. Pro Am Inst of Elec Engrs—July, 1907. No. 86533 D.

#### Grade Reduction.

Lowering the Grade of a Tunnel at Kansas City, Mo. Abstract of a paper by W. M. Archibald on the reconstruction of the 8th Street tunnel of the Metropolitan St. Ry., at Kansas City, Mo. Ills. 1500 w. Eng News—Aug. 1, 1907. No. 86081.

#### Hague.

The Hague Tramway Company (Het Bedrijf der Haagsche Tramweg-Maatschappij). E. F. Suringar. An illustrated description of the generating station, tracks, rolling stock, etc., of the Hague municipal tramway. 6500 w. De Ingenieur—June 22, 1907. No. 85691 D.

#### History.

The Historical Development of Electric Railways From Their Introduction to the Present (Die Geschichtliche Entwicklung der Elektrischen Bahnen vom Ursprung bis zur Neuzeit). Herr Peter. Traces the

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### Interurban

development of electric traction from W. von Siemens's line established in Berlin in 1879, giving a chronological table of leading events. 5000 w. *Glaser's Ann*—July 1, 1907. No. 86256 D.

### Interurban.

Electric Traction for Local Lines (La Traction Electrique sur les Lignes de Chemins de Fer D'Interêt Local). Eric Gérard. Discussion of different systems applicable to railways having strictly local traffic. 3800 w. Serial. 2 parts. *L'Electricien*—Jan. 12 and 19, 1907. No. 82346 D.

Electric Traction on Local Lines (La Traction Electrique sur les Lignes de Chemin de Fer d'Interêt local). Eric Gérard. Discusses advantages and disadvantages of different types of current, transmission lines and other details of electric traction. 4000 w. *Soc Belge d'Elec*—Feb., 1907. No. 82988 F.

The Evansville and Eastern Traction System. Features of interest on this new line in Indiana are illustrated and described. 1800 w. *St Ry Jour*—Sept. 28, 1907. No. 87297.

The Evansville, Suburban & Newburgh Railway. Describes interesting features in the construction and operation of this line in Indiana, which gives steam freight service in addition to electric operation of passenger trains. Ills. 3500 w. *St Ry Jour*—March 16, 1907. No. 83081.

Operation and Construction of the Elgin & Belvidere Railway. R. H. Rice. Illustrated detailed description of this high-speed line in Illinois. 2000 w. *Elec Ry Rev*—March 9, 1907. No. 82870.

The Construction of the Bennington & North Adams Street Railway. Charles Rufus Harte. This line closes a gap in the trolley lines between Great Barrington, Mass., and Hoosick Falls, N. Y. Illustrated description of construction under many difficulties. 2000 w. *Eng Rec*—March 2, 1907. No. 82739.

The Manchester & Nashua Street Railway. Illustrated description of an important electric interurban line in southern New Hampshire. 2200 w. *Elec Ry Rev*—March 16, 1907. No. 83080.

Some Construction and Operating Features of the Alton, Granite & St. Louis Railway. Illustrated description of a system having a number of overhead railway crossings, and many viaducts. 1600 w. *St Ry Jour*—March 30, 1907. No. 83358.

The Marion Bluffton & Eastern Railway. An important interurban line, recently completed in Indiana, is illustrated

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and described. 1200 w. *Elec Ry Rev*—April 6, 1907. No. 83527.

The Norwich & Westerly Railway. Illustrated detailed description of this high-speed interurban electric railway between Norwich, Conn., and Westerly, R. I. 2500 w. *St Ry Jour*—April 13, 1907. No. 83703.

The Peoria-Bloomington Single-Phase Line. A road built on a private right of way 80 ft. wide, in Illinois, is illustrated and described. 1200 w. *St Ry Jour*—May 4, 1907. No. 84231.

The Pittsburg & Butler Street Railway Co. M. N. Blakemore. Illustrated description of an interurban single-phase electric railway and its equipment. 3300 w. *St Ry Jour*—Aug. 10, 1907. Serial. 1st part. No. 86319.

The Pittsburg & Butler Street Railway. Illustrated detailed description of a line between the cities named, passing through attractive suburbs of Pittsburg and important oil and coal centers. 4000 w. *Elec Ry Rev*—April 27, 1907. No. 83974.

An Indian Territory Interurban System. Illustrated description of the line of the Choctaw Railway & Light Co., extending from South McAlester to Hartshorne. 1500 w. *St Ry Jour*—May 25, 1907. No. 84569.

The Spokane & Inland Empire System. Map and illustrated description of an electric line approaching in character the usual steam roads. Also brief outline of the history of the line. 2000 w. *Ry & Engng Rev*—Feb. 9, 1907. No. 82203.

Construction of the Lafayette & Logansport Railway. R. M. Feustel. Illustrated description of an interurban line in Indiana for high-speed service. 2000 w. *Elec Ry Rev*—May 4, 1907. No. 84205.

Operating Features of the Boston & Worcester Street Railway. An illustrated article fully describing the operative features and giving a schedule of the cost of power generation and operation. 10000 w. *St Ry Jour*—May 4, 1907. No. 84228.

The Plans of the Boston and Eastern Electric Railroad. Gives an abstract of plans submitted for the building of a high-speed interurban railroad. 5000 w. *St Ry Jour*—July 13, 1907. No. 85531.

The Ft. Dodge, Des Moines and Southern Railway. Illustrated description of this line, partly on private right of way, and partly on electrified old lines. 1700 w. *Elec Ry Rev*—May 25, 1907. No. 84599.

Interurban Railway Development Near

## STREET AND ELECTRIC RAILWAYS

### Italy

Milwaukee. Map and illustrated description of the large interconnected system planned, and some of the construction work. 3500 w. *St Ry Jour*—Aug. 3, 1907. No. 86082.

See also Atlantic Shore Line, Boston-Salem, Burton & Ashby, California, Fort Wayne, Lausanne, Los Angeles, Cal., Muncie & Portland, New Jersey, Tacoma Wash., Third Rail, and Vienna-Baden, under STREET AND ELECTRIC RAILWAYS.

### Italy.

Electric Traction on Italian Railways. A review of the situation in Italy and the effort to substitute electric traction for all steam railways. 4000 w. *Engr, Lond*—Feb. 15, 1907. No. 82612 A.

Tests of Electric Traction on Italian Railways (*Les Essais de Traction Electrique sur les Chemins de Fer Italiens*). Philippe Tajani. Discusses the importance of the immense water powers of Italy, progress in the electrification of steam railroads, state regulation, etc. 8000 w. *Rev Inter Econ*—June, 1907. No. 85608 H.

Italian Tramways (*Die Strassenbahnen Italiens*). D. Liebmann. Discusses the extent and distribution of electric railways in Italy, with general notes on Italian practice. 2000 w. *Verkehrstech Woche u Eisenbahntechnik Zeitschr*—July 6, 1907. No. 86243 D.

Milan-Galarate Electric Railway. Brief illustrated description of the equipment of a railway which has been using continuous-current for the motors with great success. 1000 w. *Tram & Ry Wld*—Feb. 7, 1907. No. 82588 B.

The Single-Phase Railroad of the Brembana Valley (Italy). E. A. Kerbaker. Illustrated detailed description of this new line and its operation. 2000 w. *Elec Rev, Lond*—May 31, 1907. No. 84882 A.

The Valle Brembana (Italy) Electric Railroad. C. L. Durand. Illustrated description of a standard-gauge, single-phase system used on a line connecting Bergamo with San Giovanni Bianco, a distance of about twenty miles. 4000 w. *Elec Rev, N Y*—June 22, 1907. No. 85210.

The Single-Phase Electric Railroad of the Val Brembana (*Ferrovia Elettrica Monofase della Val Brembana*). Illustrated description of the electric locomotive built by the Westinghouse Company. 2200 w. *Industria*—July 14, 1907. No. 86220 D.

### Lausanne.

Lausanne Tramways (*Les tramways*

### Manchester, Eng.

Lausannois). Aug. Wohnlich. Description of the construction and the operative features of the street railways of a modern Swiss city. *Illus. Serial*. 1st and 2d instalments. 7200 w. *Bull Technique de la Suisse Romande*—Jan. 10 and Jan. 25, 1907. No. 83606 each D.

Lausanne Tramways (*Les Tramways Lausannois*). M. E. Barraud. Notes on recent extensions in the network of inter-urban electric railways radiating from Lausanne, Switzerland, giving details of construction, operation, traffic, etc. *Ills*. 2500 w. *Bull Tech Suisse Rom*—April 25, 1907. No. 84111 D.

### Leyton.

Leyton District Council Tramways. Map and illustrated description of this recently completed system. 5500 w. *Tram & Ry Wld*—Dec. 6, 1906. No. 81237 B.

### London.

The Victoria Embankment Tramway. Outline map and illustrated description of features of this new line. 2500 w. *Tram & Ry Wld*—Jan 10, 1907. No. 81771 B.

London United Electric Tramways. Historical account of the development of Sir Clifton Robinson's enterprise, with illustrated detailed description. 7500 w. *Tram & Ry Wld*—June 6, 1907. No. 85167 B.

The Rapid Transit Systems of London. Notes on recent improvement of transit facilities, especially considering motor omnibuses, electric street railways, and underground railways. *Ills*. 5000 w. *Eng News*—March 21, 1907. No. 83197.

City and South London Railway. Map, plans and description of the Islington to Euston extension. 3300 w. *Tram & Ry Wld*—May 2, 1907. No. 84352 B.

The Charing Cross, Euston & Hampstead Railway. Illustrated description of this new line, "the last link" in the system of underground tube railways in London. 2000 w. *Elect'n, Lond*—May 31, 1907. *Serial*. 1st part. No. 84885 A.

### Los Angeles, Cal.

Track and Roadway of the Pacific Electric and Los Angeles Interurban Railways. Map showing the territory served by these companies, with an illustrated description of recent track work. 1200 w. *Elec Ry Rev*—Aug. 31, 1907. No. 86695.

### Manchester, Eng.

Manchester Corporation Tramways. Indicates the scope of this undertaking, illustrating special track work, rolling stock and other features of interest, and describing methods of operation. 2500 w. *Tram & Ry Wld*—Sept. 5, 1907. No. 87052 B.



## STREET AND ELECTRIC RAILWAYS

### Mine Haulage

#### Mine Haulage.

Electric Mine Haulage at the Minister Achenbach Mine near Dortmund (Die Elektrisch Betriebene Lokomotivstreckenförderung auf der Zeche Minister Achenbach bei Dortmund). Hr. Hildebrand. Illustrated description of electric locomotives, track, circuits and plant in a coal mine. 1200 w. Glückauf—Nov. 17, 1906. No. 81909 D.

#### Mono-Rail.

A New Mono-Railway. Illustration with brief description of the mono-railway designed by Louis Brennan, and report of trials. 1000 w. Engr, Lond—May 10, 1907. No. 84450 A.

The Theory of the Gyroscope. An explanation of the theory, referring to its application to the Brennan mono-rail car. 1200 w. Engng—June 7, 1907. No. 85116 A.

#### Motor Cars.

New 14-Ton Motor Cars, Denver City Tramway. Illustrated description of cars having an especially low weight per unit of seating capacity. 1200 w. Elec Ry Rev—April 6, 1907. No. 83526.

#### Motors.

Calculation and Examination of the Characteristic Curves of Direct- and Alternating-Current Series Motors with regard to the Requirements of Electric Traction (Vorausberechnung und Beurteilung der Charakteristischen Kurven von Seriomotoren für Gleichstrom und Wechselstrom hinsichtlich der Bedürfnisse der Elektrischen Traktion). W. Kummer. Mathematical paper. Ills. Serial. 2 parts. 4500 w. Schweiz Bau—May 18 and 25, 1907. No. 84965 each B.

The Characteristic Curves of Rotating-Current Motors with Change-Speed Gear for the Requirements of Electric Traction (Ueber die Charakteristischen Kurven von Drehstrommotoren mit Stufenregelung der Umdrehungszahl für die Bedürfnisse der Elektrischen Traktion). Dr. W. Kummer. A theoretical and mathematical paper. Ills. 3000 w. Serial. 1st part. Schweiz Bau—Aug. 31, 1907. No. 86961 D.

Recent Improvements in Motor and Control. Clarence Renshaw. Read before the N. Y. State St. Ry. Assn. Considers interpole motors, unit switch control, and the single-phase system. Ills. 5000 w. St Ry Jour—June 29, 1907. No. 85369.

Recent Improvements in Motor and Control. G. H. Hill. Read before the N. Y. State St. Ry. Assn. Considers various points of improvement in design.

### New Jersey

3000 w. St Ry Jour—June 29, 1907. No. 85368.

Motors for Railway Service. Explains the difference between torque and horsepower, the relation between the speed of the motor shaft and the speed of the car, etc. 1400 w. Ry & Loc Engng—July, 1907. No. 85430 C.

Commutating-Pole Direct-Current Railway Motors. E. H. Anderson. Briefly reviews the important developments in railway motors, discussing in detail the motor named and stating its advantages as compared with the non-commutating pole type. 3000 w. Pro Am Inst of Elec Engrs—Aug., 1907. No. 87144 D.

Regenerative Control. A. Raworth. Abstract of a paper read before the Leeds Loc. Sec. of the Inst. of Elec. Engrs. Discusses the control of shunt motors used for electric traction. Diagrams and discussion. 5000 w. Elect'n Lond—Dec. 7, 1906. No. 81011 A.

Electricity Regeneration by Tramway Motors. Edward H. Johnson. Extracts from a paper before the Manchester Assn. of Engrs. on "The Third Function of Electric Traction Motors." Considers types of motors and methods of control, etc. Ills. 2200 w. Mech Engr—Dec. 8, 1906. Serial. 1st part. No. 81023 A.

Regeneration of Power with Single-Phase Electric Railway Motors. William Cooper. Describes a system of regenerating power which has been thoroughly tested. 2700 w. Pro Am Inst of Elec Engrs—Aug., 1907. No. 87142 D.

1200-Volt and Commutating-Pole Direct-Current Railway Motors. E. H. Anderson. Read before the Cent. Elec. Ry. Assn. Reviews briefly features in the development of railway motors, explaining the advantages of commutating-pole motors. 3000 w. Elec Ry Rev—Sept. 28, 1907. No. 87300.

See also Single Phase, under STREET AND ELECTRIC RAILWAYS.

#### Mountain.

The Modern Mountaineer. Information in regard to the proposed Matterhorn railway, illustrating the type of car which will be used on the lower slopes. 1200 w. Ry & Loc Engng—July, 1907. No. 85426 C.

#### Muncie & Portland.

The Muncie & Portland Traction Company. Illustrated description of Indiana line, mostly on private right of way, and desirably located for high speeds. 2500 w. Elec Ry Rev—Nov., 1906. No. 80424.

#### New Jersey.

The Morris County Traction Com-

## STREET AND ELECTRIC RAILWAYS

### New Mexico

pany's Inter-Suburban System in New Jersey. An illustrated article explaining the purpose of this system of railways, and describing details. 1500 w. St Ry Jour—Jan. 12, 1907. No. 81586.

### New Mexico.

The Las Vegas Railway & Power Company. Illustrated description of this railway and power plant. 2000 w. St Ry Jour—Jan. 26, 1907. No. 81962.

### New Orleans.

The New Orleans Public Belt Railroad. Map, description, and general information in regard to this belt railway which will encircle the greater part of the city. 1800 w. Ry Age—March 22, 1907. No. 83255.

### New York.

The East Side Bronx Transportation Question in New York: I. Present Conditions. A review of the present situation is given in the present article. 4300 w. St Ry Jour—Dec. 29, 1906. Serial. 1st part. No. 81321.

Passenger Traffic in Greater New York. Information concerning the enormous passenger traffic to be provided for in Greater New York, its rapid increase, and the necessity of constantly increasing the facilities. 3500 w. Eng Rec—May 11, 1907. No. 84322.

Transit Facilities in New York. The first of a series of articles describing the nature and progress of transit work in New York City, and the part of the New York Rapid Transit Commission. 3300 w. Engr, Lond—Feb. 1, 1907. Serial. 1st part. No. 82259 A.

Rapid Transit Conditions in New York. Diagrams and interesting information from the report for 1906 of the Board of Rapid Transit Railroad Commissioners for the City of New York. 3500 w. R R Gaz—Sept. 20, 1907. No. 87914.

### New York Central R. R.

General Features of the New York Central Electrification. A collection of articles dealing especially with the operating practice of stations, sub-stations, etc., and of methods of conducting transportation. Fully illustrated. 30600 w. St Ry Jour—Oct. 12, 1907. No. 87776.

The New York Central's Electric Lines. Map, illustrations and general information in regard to these lines and the service, especially between Little Falls and Syracuse. 2000 w. R R Gaz—July 19, 1907. No. 85783.

Sub-Stations and Transmission System of the New York Central & Hudson River Railroad. Illustrated description. 2500

### Power Stations

w. St Ry Jour—Nov. 3, 1906. No. 80247.

### Ontario.

Electric Railway Development in Ontario. R. J. Clark. Read before the Canadian St. Ry. Assn. Statistics showing the general progress, with historical details of early lines. 1200 w. St Ry Jour—July 6, 1907. No. 85447.

### Paris.

The Paris Metropolitan Railway. Map showing the network of lines completed and proposed, with an account of the working, rates, etc. 2700 w. Engng—Jan. 11, 1907. No. 81744 A.

The Construction of the New Lines of the Paris City Railways (Ueber die Bauten der Neuen Linien der Pariser Stadtbahn). E. A. Ziffer. Describes recent extensions to the Paris tramway system, tunnels, stations, etc., giving costs. 5000 w. Mitt d Ver f d Förd d Lokal u Strassenbahnwesens—July, 1907. No. 86222 F.

### Philadelphia.

Recent Progress in Heavy Electric Railway Work at Philadelphia. Illustrates and describes the work thus far completed in connection with the subway and elevated service. 3500 w. St Ry Jour—Feb. 16, 1907. No. 82437.

Opening of the New Market Street Elevated Railway of the Philadelphia Rapid Transit System. Edward Hungerford. An account of the opening of the line, with illustrated description of the subway section, the elevated section, local stations, terminal stations, equipment and signals. 2800 w. Elec Ry Rev—March 9, 1907. No. 82869.

### Power.

The Cost and Sale of Railway Power. G. H. Kelsay. Read before the Cent. Elec. Ry Assn., Indianapolis, Ind. Considers the factors involved when estimating the cost of power for the purpose of sale. 3000 w. Elec Ry Rev—Jan. 26, 1907. No. 81965.

### Power Stations.

The Power Plant of the Norfolk & Portsmouth Traction Co. Illustrated detailed description of a thoroughly modern plant which will furnish power to operate a number of electric railways. 3000 w. Eng Rec—July 6, 1907. No. 85454.

The Power Plant of the Norfolk & Portsmouth Traction Company. A new generating station at Norfolk, Va., with a capacity of 10,500 kw., made up of a 1,500-kw. and three 3,000-kw. turbo-generator units, and modern in all the details of its design is illustrated and de-

## STREET AND ELECTRIC RAILWAYS

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scribed. 2500 w. St Ry Jour—July 13, 1907. No. 85530.

New Power Plant of the Central Pennsylvania Traction Co. at Harrisburg, Pa. A new plant of about 2,000 kw. capacity is illustrated and described. 2000 w. Eng Rec—June 8, 1907. No. 84854.

New Power Plant of the Central Pennsylvania Traction Company at Harrisburg, Pa. Illustrates and describes interesting features. 2200 w. St Ry Jour—April 27, 1907. No. 83972.

Electric Generating Station of the Paxtang Electric Company of Harrisburg, Pa. Illustrated detailed description of the building and equipment, the transmission lines, sub-station, etc. 4000 w. Elec Wld—Feb. 16, 1907. No. 82430.

The Steam Power Station of the Twin City Rapid Transit Company, Minneapolis. Illustrated description of a steam-driven electrical generating station having a normal rated capacity of 35,000 h.p. and an overload capacity of 50,000 h.p. 3500 w. St Ry Jour—July 27, 1907. No. 85949.

Steam Power Station, Twin City Rapid Transit Company, Minneapolis, Minn. Illustrated detailed description of a plant which operates in parallel with a water-power station of 10,000 h.p. capacity located about 1,000 ft. away. Together they furnish power to ten electric railway sub-stations. 3000 w. Pro Am Inst of Elec Engrs—Feb., 1907. No. 83042 D.

New Power Station of the Illinois Traction System at Peoria, Ill. C. S. Johnson. Illustrated detailed description of the building, its arrangement and equipment. 2500 w. Elec Ry Rev—Feb. 23, 1907. No. 82552.

New Turbine Generating Station of the Illinois Traction System at Peoria, Ill. Illustrated description of the interesting features of this station. The method of handling the coal and ashes, the vertical machinery in the turbine room, etc. 1500 w. St Ry Jour—July 20, 1907. No. 85830.

The Reconstruction of the East St. Louis & Suburban Ry. Power Station. Illustrates and describes additions and rearrangement. 2500 w. Eng Rec—Aug. 3, 1907. No. 86089.

New Power Plant of the Pittsfield Electric Street Railway Company. This steam-driven power station is illustrated and described as an interesting example of standard reciprocating engine practice for operating a small system economically. 2000 w. St Ry Jour—June 22, 1907. No. 85208.

The Power Station of the Little Rock Railway & Electric Company. Illustrated

### Puy de Dome

description of a station which departs, in many details, from the usual practice. The notable features are the provisions for light and ventilation, the vertical loop system of the main steam and main feeder headers, and the cylinder lubricating system. 1800 w. St Ry Jour—May 11, 1907. No. 84281.

Operating Features of the Long Island City Power Station of the Pennsylvania Tunnel and Terminal Railroad Co. Several articles on the equipment and electrical operation of the Long Island R. R. Ills. 12000 w. St Ry Jour—Oct. 12, 1907. No. 87778.

Cos Cob Power Station, New York, New Haven & Hartford Railroad Company. Illustrates and describes this station, of interest as a part of the first installation of single-phase electric equipment for the operation of a trunk line railway. 3500 w. St Ry Jour—Aug. 31, 1907. No. 86697.

The Power Plant of the Spokane & Inland Empire R. R. Co. William F. Zimmermann. Brief illustrated description of this power development in the State of Washington. 1300 w. Eng Rec—March 2, 1907. No. 82718.

The Electricity Generating Station of the Great Eastern Railway Co. Illustrated description of the power station at Stratford, Eng., and of its equipment. 2500 w. Elect'n, Lond—June 7, 1907. No. 85106 A.

Preston, England, Electric Railway Run by City Refuse. Frank C. Perkins. Illustrates and describes an interesting destructor installation which generates steam for the supply of the electric tramway department of the municipality. 2500 w. Elec Rev, N Y—June 8, 1907. No. 84845.

The Power Station Practice of the West Jersey & Seashore Railroad. With related articles describing the electrical operation of this line. Ills. 9000 w. St Ry Jour—Oct. 12, 1907. No. 87780.

The Hydroelectric and Steam Equipment of the Athens (Ga.) Electric Railway Company. An illustrated account of the development. 2000 w. Elec Rev, N Y—Dec. 22, 1906. No. 81207.

See also Electrification, New Mexico, Sub-stations, and Waste Gases, under STREET AND ELECTRIC RAILWAYS; and under ELECTRICAL ENGINEERING, GENERATING STATIONS.

### Puy de Dome.

Steam Railway from Clermont Ferrand to the Puy de Dome (Tramway de Clermont-Ferrand au Puy de Dome). A.

## STREET AND ELECTRIC RAILWAYS

### Rail Corrugation

Dumas. Illustrated description of adhesion railway up this French mountain, with a maximum grade of 12 per cent. The locomotives have horizontal wheels which grip a central rail. 1 plate. 3000 w. *Génie Civil*—Nov. 10, 1906. No. 80630 D.

The Puy-de-Dome Mountain Railway. Illustrated description of this railway in France, in which the locomotive is assisted by the Fell friction-grip, centre-rail system. 1000 w. *Eng News*—Oct. 10, 1907. No. 87551.

### Rail Corrugation.

Rail Corrugations. R. W. Western. Remarks on the causes after a study of the track of the South London tramways. 2500 w. *Tram Ry Wld*—Feb. 7, 1907. No. 82591 B.

Rail Corrugation in Great Britain. Gives views of managers and engineers from the principal towns of the country in regard to the cause of corrugation. 9000 w. *Tram & Ry Wld*—Feb. 7, 1907. No. 82592 B.

The Corrugation of Rails. Describes investigations carried out on the North-Eastern Railway, England, with table of tests. Ills. 2500 w. *Engng*—June 14, 1907. No. 85241 A.

The Origin and Production of Corrugation of Tramway Rails. W. Worby Beaumont. Read before the British Assn. Offers an explanation of the origin and production of these corrugations. 2000 w. *Elec Engr, Lond*—Aug. 9, 1907. No. 86456 A.

The Lack of Perfect Regularity of the Rolling Surface of Certain Hard-Steel Rails and the Inconveniences which Result from it (Note sur le Défaut de Nivellement Parfait de la Surface de Roulement de Certains Rails en Acier Dur et les Inconvénients qui en Résultent). E. Perroud. Observations on rail corrugation on the Northern Railway of France. Ills. 6600 w. *Rev Gen d Chemins d Fer*—Aug., 1907. No. 86921 G.

The Causes of Rail Corrugation. Describes tests made by H. B. Nichols, and the apparatus used, which seems to prove the trouble to be due to vibration, either in the rails or in the entire track structure. Ills. 1500 w. *Tram & Ry Wld*—May 2, 1907. No. 84354 B.

Rail Corrugations in Philadelphia. Points out differences in practice in the street railways of England and America, and describes the conditions in Philadelphia and gives H. B. Nichols' conclusion that rail corrugations are caused by vibrating rails. Ills. 2000 w. *St Ry Jour*—May 18, 1907. No. 84372.

### Rapid Transit

Rail Corrugation. Joseph A. Panton. Gives details of the method of investigation employed by the writer, and the results that formed the basis of his theory that the trouble is due to defects in the rolling-stock. Ills. 5000 w. *Inst of Elec Engrs*—March 21, 1907. No. 83556 N.

### Rail Laying.

A Machine for Laying Rails in Streets. Illustrated description of the Romapac machine for laying and fixing the rails of street railways. 2500 w. *Sci Am Sup*—Aug. 24, 1907. No. 86519.

### Rails.

Rail Creeping and Expansion. E. Goolding. Briefly considers the causes of their movements. 1000 w. *Elec Engr, Lond*—Jan. 11, 1907. No. 81732 A.

Standard Rail Sections for Paved Streets. C. Gordon Reel. Reviews the history of the girder rail, and states the advantages of T-rail sections, giving data from many cities. Ills. 6000 w. *St Ry Jour*—Jan. 26, 1907. No. 81963.

New Rails for the Chicago Street Railways. Gives specifications for rails of the grooved girder type. 1500 w. *Eng News*—May 23, 1907. No. 84497.

Standardization of Rail Sections of the German Street & Interurban Railway Association. Gives a report recently presented at Mannheim, Germany, in which fifteen sections are proposed for standardization. 1500 w. *St Ry Jour*—Sept. 14, 1907. No. 87039.

The Use of the T-Rail in Cities. C. Gordon Reel. Read before the Am. St. & Int. Ry. Assn. Gives an account of satisfactory use at Kingston, N. Y. Diagrams. 1000 w. *St Ry Jour*—Oct. 26, 1907. No. 87994.

See also Tracks, under STREET AND ELECTRIC RAILWAYS.

### Rail-Welding.

Thermit Rail-Welding—Experiences of the Utica & Mohawk Valley Railway Company. M. J. French. Gives a brief description of the details of the thermit welding process, and of special features in the work on the road named. Ills. 3000 w. *St Ry Jour*—Jan. 12, 1907. No. 81587.

### Rapid Transit.

Suggestions on Rapid Transit with Particular Reference to Rolling Stock. John P. Fox. An illustrated article considering the practical working of a number of car types as applied to the New York subway conditions. 5000 w. *St Ry Jour*—Jan. 5, 1907. Serial. 1st part. No. 81451.

## STREET AND ELECTRIC RAILWAYS

### Review

Urban and Suburban Traffic. Lynden Macassey. Read before the Economic Soc. of the British Assn. Discusses the distribution of population by facilities of rapid transit, as a relief for concentrated districts. 4800 w. Engng—Feb. 8, 1907. No. 82469 A.

A Continuous Variable-Speed System of Rapid Transit. Illustrated description of a system operated by a continuous screw without motors or transmission and with no risk of collision. 1700 w. Sci Am—April 6, 1907. No. 83458.

### Review.

Electric Railroading in 1906. Dr. Louis Bell. A review of the progress during the year, which shows improved construction, and the introduction of electricity on steam roads, especially the terminal division of the N. Y. Central. 2500 w. Elec Rev, N Y—Jan. 12, 1907. No. 81591.

### Rules.

Report of Committee on Interurban Rules. A report of the rules adopted at the Kingston meeting of the Street Railway Association of the State of New York, Sept. 21, 1907. 12000 w. St Ry Jour—Sept. 28, 1907. No. 87298.

New Prussian Regulations Governing the Construction and Operation of Electric Street Railways. A reprint of the more important of the new regulations. 3000 w. St Ry Jour—Dec. 1, 1906. No. 80775.

### Scotland.

Dumbarton Electric Tramways. Illustrated detailed description of these electric lines and their equipment. 2200 w. Tram & Ry Wld—April 4, 1907. No. 83775 B.

### Securities.

See same title, under INDUSTRIAL ECONOMY.

### Shops.

Shop Practice at Memphis. Illustrates and describes the shop and car houses at Memphis, Tenn., their equipment and methods. 3000 w. Elec Ry Rev—Jan. 26, 1907. No. 81964.

Shop Practice at Memphis. An illustrated account of the work in these re-organized street railway shops during the last two years. 4000 w. St Ry Jour—March 2, 1907. No. 82684.

Car House and Shops at Knoxville, Tenn. Illustrated detailed description of the new buildings and their equipment. 1500 w. Elec Ry Rev—April 13, 1907. No. 83721.

New Shops and Car Houses at Knox-

### Signalling

ville—Shop Practice. Illustrated article giving details regarding these shops and the shop practice. 1500 w. St Ry Jour—Oct. 5, 1907. No. 87491.

Concrete Shops and Car Houses at Nashville. Illustrated description of shops representing the most advanced ideas in fireproof construction and in arrangement for facilitating car repairs. 1200 w. St Ry Jour—Sept. 14, 1907. No. 87038.

Shops of the North Jersey Division of the Public Service Corporation. Illustrated detailed description of a large and finely equipped plant for shop work and car storage. 2000 w. Elec Ry Rev—March 16, 1907. Serial. 1st part. No. 83079.

The System of Fire Protection at the Plank Road Shops of the Public Service Corporation of New Jersey. Martin Schreiber. Describes briefly some features of construction and the practice of the company in handling and storing material; and gives an illustrated description of the system of fire protection installed. 5000 w. St Ry Jour—June 1, 1907. No. 84684.

New Shops and Shop Practice of the Omaha & Council Bluffs Street Railway Company. An illustrated account of these shops and the practice in them. 2500 w. St Ry Jour—June 22, 1907. No. 85207.

New Shops of the Bangor Railway. Illustrated description of shops built of concrete blocks, and of their arrangement and methods. 1800 w. Elec Ry Rev—Aug. 10, 1907. No. 86322.

Shops and Shop Practice of the Los Angeles Railway. An illustrated article describing the new shops and storage buildings and outlining some of the interesting shop methods. 3000 w. Elec Ry Rev—July 6, 1907. No. 85439.

Some Notes on Electric Railway Shops and Shop Practice in Central New York. W. H. Collins. Read before the N. Y. State Ry. Assn. Pronounces the shops very inadequate, lacking suitable tools and sufficient room. 1000 w. St Ry Jour—June 29, 1907. No. 85367.

See also Brooklyn, and Car Barns, under STREET AND ELECTRIC RAILWAYS.

### Signaling.

Alternating Current Track Circuits in the New York Subway. J. W. Waldron. Illustrated detailed description of the system installed with explanation of the reasons for adopting it. 1200 w. Pro Ry Sig Assn—1906. No. 82485 N.

Power Signalling as Installed by the

## STREET AND ELECTRIC RAILWAYS

### Signalling

Underground Electric Railways Co., of London. Illustrated detailed description of the automatic signalling system. 2500 w. *Elec Rev*, Lond—March 15, 1907. Serial. 1st part. No. 83265 A.

Track-Circuit Signaling on Electrified Roads. L. Frederic Howard. Traces the development of track-circuit apparatus during the last ten years, showing the relations existing between the track-circuit system and the propulsion system on electrified roads. Ills. 4000 w. *Pro Am Inst of Elec Engrs*—Aug., 1907. No. 87145 D.

The Electric Signals on the Paris Metropolitan Railway. A Soulier. Translated from *L'Ind. Elec.* Describes the two types of the Hall automatic block system installed; the track circuit system, and the pedal system. Ills. 2000 w. *Elect'n*, Lond—Aug. 30, 1907. No. 86864 A.

Solenoid Signals on the Manhattan Elevated. Illustrates and describes the semaphore block signals recently put in service on curves. 800 w. *R R Gaz*—Sept. 20, 1907. No. 87911.

### Simplon.

The Electrification of the Simplon Tunnel Railroad. An illustrated description of this work and the methods of operating. 4000 w. *Sci Am Sup*—March 16, 1907. No. 83020.

Electrical Equipment of the Simplon Railway (Der Elektrische Betrieb der Simplon-Bahn). H. Rupp. Description of the line, overhead construction, locomotives, etc. Illus. Serial. 2 parts. 6900 w. *Zeitschrift des Vereines Deutscher Ingenieure*—Feb. 9 and Mar. 9, 1907. No. 82925 each D.

The Electric Installations for the Operation and Lighting of the Simplon Tunnel (Les Installations Electriques pour l'Exploitation et l'Eclairage dans le grand Tunnel du Simplon). E. Rod. The first instalment describes the cables for telegraph, telephone, lighting, signal systems, their construction, laying, etc. Ill. Serial. 1st part. 2500 w. *Bull Tech d l Suisse Rom*—March 25, 1907. No. 83698 D.

Operating Arrangements of the Simplon Railway (Die Betriebseinrichtungen der Simplonbahn). Karl Pallasman. Describes the lighting, ventilation, etc. Ills. 3000 w. *Oest Wochenschr f d Oeff Bau-dienst*—May 25, 1907. No. 84963 D.

Electric Traction in the Simplon Railway Tunnel. J. B. van Brussel. An illustrated description of this successful installation on the three-phase system. 2500 w. *Engineering Magazine*—May, 1907. No. 83937 B.

### Single-Phase

See also same title, under RAILWAY ENGINEERING, PERMANENT WAY AND BUILDINGS.

#### Single-Phase.

Proposed European Traction System Employing Rectified Single-Phase Currents. Illustrated description of permutator developed abroad for converting alternating currents to direct currents, and of a "regulating rectifier," resembling it, being tested in Paris. 1200 w. *St Ry Jour*—Dec. 1, 1906. No. 80773.

Lecture on Single Phase Traction. Abstract of a lecture by W. S. Murray, before the Elec. Engng. Soc. of Columbia Univ., giving information concerning single-phase traction, particularly the method employed by the N. Y., N. H. & H. R. R. in substituting electric for steam locomotives. 1500 w. *St Ry Jour*—March 30, 1907. No. 83361.

Single-Phase Electric Traction. Charles Frewen Jenkin. Shows the progress made in other systems, and describes some of the more important apparatus and appliances used for single-phase traction, discussing the problems which arise in their working. Also discussion. Plates. 25000 w. *Inst of Civ Engrs*, No. 3647. No. 84469 N.

Single-Phase Railways. F. E. Wynne. An illustrated article describing in detail the single-phase system and its operation. General discussion. 9000 w. *Pro Engrs' Club of Phila*—April, 1907. No. 84524 D.

The Single-Phase Motor and City Trolleys. Walter I. Tamlyn. Discusses briefly the requirements of city service, giving reasons why the single-phase motor is not likely to replace the direct-current type. 1000 w. *Elec Rev*, N Y—July 27, 1907. No. 85951.

Single-Phase vs. Direct-Current Railway Operation. Malcolm MacLaren. Discusses features of the single-phase system which the writer feels have been inadequately presented, giving comparisons. 2500 w. *Elec Jour*—Aug., 1907. No. 86400.

Single-Phase versus Three-Phase Generation for Single-Phase Railways. A. H. Armstrong. Various methods of distribution are given with some of the advantages and disadvantages of each. 1300 w. *Pro Am Inst of Elec Engrs*—July, 1907. No. 86531 D.

General Notes on the Development and Future Prospects of the Application of Single-Phase Current to Electric Railroads (Allgemeine Gesichtspunkte über die Entwicklung und die Aussichten des Einphasenstrom-Bahnbetriebes). A. Heyland. Considers the problem both theoret-

## STREET AND ELECTRIC RAILWAYS

### South America

ically and practically. 3200 w. Serial. 1st part. *Elektrotech Zeitschr*—Sept. 12, 1907. No. 87657 D.

See also *Electric Locomotives*, Erie R. R., Expositions, Frequency, Italy, Interurban, and Motors, under **STREET AND ELECTRIC RAILWAYS**.

### South America.

Tramway System of Montevideo. An illustrated description of the electrically operated lines at the capital of Uruguay. 2500 w. *St Ry Jour*—May 4, 1907. No. 84230.

### Standardization.

Standard Car Connections. H. Schlegel. Presents the advantages and gives suggestions adapted from actual experience in standardizing connections on a system employing ten kinds of motor equipments. 1800 w. *St Ry Jour*—Jan. 12, 1907. No. 81588.

A Claim Agent's View of Standardization. Edward O'Callaghan. An address on the standardization of street railway equipment. 1700 w. *St Ry Jour*—April 6, 1907. No. 83477.

Meeting of the Standardization Committee. An account of the meeting of the Committee of Standards of the Am. St. & Int. Ry. Engng Assn., giving a summary of the discussions. 3000 w. *St Ry Jour*—Aug. 10, 1907. No. 86321.

Report of the German Street and Interurban Railway Association's Committee on Standardization. Abstract translation. 3300 w. *St Ry Jour*—Sept. 7, 1907. No. 86779.

See also *Equipment*, under **STREET AND ELECTRIC RAILWAYS**.

### Storekeeping.

Records of the Storekeeping Department, Denver City Tramway Company. An explanation of the methods used, giving blank forms. 1700 w. *Elec Ry Rev*—Jan. 12, 1907. No. 81616.

### Substations.

New Substations of the Metropolitan West Side Elevated Railway Company. Illustrated detailed description of two rotary-converter substations of interesting design, recently put into operation in Chicago. 2000 w. *Elec Ry Rev*—Jan. 19, 1907. No. 81702.

Portable Electric Railway Substations. Brief illustrated description of electric substation equipment as used on two interurban railroads in the United States. 700 w. *Ry & Engng Rev*—Jan. 12, 1907. No. 81614.

New Substation of the International

### Subways

Railway Company, Buffalo, N. Y. Illustrated description of the Seneca Street substation just completed. 1800 w. *Elec Ry Rev*—Feb. 16, 1907. No. 82436.

Substations of the Los Angeles Railway. Brief illustrated description. 1200 w. *Elec Ry Rev*—Sept. 14, 1907. No. 87037.

Practice versus Theory in Electric Railway Substation Operation. Sydney W. Ashe. The writer obtained employment in a substation for the purpose of investigation, and gives suggestions from the impressions gained. 2000 w. *Elec Rev*, N Y—Nov. 24, 1906. No. 80581.

See also *New York Central R. R.*, under **STREET AND ELECTRIC RAILWAYS**.

### Subways.

Setting out of Tube Railways. G. M. Halden. Remarks on street surveying, and the instruments used, with a detailed description of the setting out and construction of tube railways. 1600 w. *Engr. Lond*—Oct. 26, 1906. Serial. 1st part. No. 80310 A.

Great Northern, Piccadilly, and Brompton Railway. Illustrated description of London's longest tube, representing the latest practice. A system of high-tension three-phase transmission to sub-stations with low-tension continuous current feeding to the working conductors. 8000 w. *Tram & Ry Wld*—Dec. 6, 1906. No. 81236 B.

The Great Northern. Piccadilly and Brompton Railway. Map and illustrated description of the second of the tube railways associated with the Underground Electric Railways Co. of London. 3500 w. *Elect'n, Lond*—Dec. 7, 1906. Serial. 1st part. No. 81010 A.

Charing Cross, Euston, and Hampstead Railway. Illustrates and describes this recently completed line, and giving information concerning the undertaking of the Underground Railways Co. Also editorial. 6000 w. *Tram & Ry Wld*—July 4, 1907. No. 85852 B.

The Baker St.-Waterloo Tube Railway in London (Ueber die Baker Street-Waterloo Tunnel-Röhrenbahn in London). E. A. Ziffer. Illustrated description of tube, stations, cars, etc. 3500 w. *Mitt d Ver f d Förd d Lokal u Strassenbahnwesens*—June, 1907. No. 85694 F.

The Selby Hill Street Railway Tunnel, St. Paul, Minn. Illustrates and describes recently completed work which greatly reduces a steep grade on an important street railway line. 3500 w. *Eng Rec*—Sept. 21, 1907. No. 87149.

Proposed Subway System to Connect

## STREET AND ELECTRIC RAILWAYS

### Subways

the Brooklyn and Williamsburg Bridges. Explains the congested conditions at these bridges, and the proposed subway system for distributing the traffic. 2000 w. *St Ry Jour*—Nov. 24, 1906. No. 80580.

New York's New Subways. Map and information concerning the seven new subway routes to be built by the City of New York. 1200 w. *Eng News*—Dec. 27, 1906. No. 81285.

The Lexington Avenue Subway, New York. Plans and description of this new line about to be constructed. 1500 w. *Elec Ry Rev*—April 13, 1907. No. 83720.

Pittsburgh Subways. E. K. Morse. Explains present conditions in this city and the pressing need of better transit facilities, giving reasons against elevated roads and in favor of underground railways, and discusses the construction, motive power, etc. Also considers subways generally. Ills. and general discussion. 12000 w. *Pro Engrs' Soc of W Penn*—March, 1907. No. 83702 D.

The Market Street Subway, Philadelphia. Illustrated detailed description. 2500 w. *Eng Rec*—Oct. 12, 1907. No. 87564.

See also London, Paris, and Philadelphia, under STREET AND ELECTRIC RAILWAYS.

### Subway Stations.

Preliminary Construction for the Manhattan Subway Station at Williamsburg Bridge. Illustrates and describes preliminary work for the construction of a station providing for an eight-loop terminal for surface cars and a 620-ft. two-track terminal for elevated trains. 1200 w. *Eng Rec*—April 27, 1907. No. 83948.

The Passenger Stations of the Hudson Companies. Brief illustrated description of the plans for the passenger stations in New York, Jersey City and Hoboken. 800 w. *St Ry Jour*—March 9, 1907. No. 82846.

The Double-Deck Surface and Tunnel Station of the Hudson Companies in Jersey City. Outlines the extensive engineering works in progress to connect Jersey City and Manhattan Island, and gives an illustrated description of the underground station, below the present terminal of the Pennsylvania Railroad in Jersey City. 1800 w. *Sci Am*—Sept. 21, 1907. No. 87124.

Report of the Cambridge Subway Stations. Abstract of an exhaustive report submitted by William Barclay Parsons upon the question of station locations. 2500 w. *St Ry Jour*—June 15, 1907. No. 85066.

### Switzerland

Paris Subway Stations. George B. Ford. Illustrates and describes some of the entrances to subway stations in Paris, comparing them with work in London and New York. 1600 w. *Am Archt*—Oct. 5, 1907. No. 87452.

The Saint-Michel Station of the Paris Metropolitan. Brief illustrated description of the method of construction in connection with building a tube under the Seine. 2000 w. *Sci Am Sup*—July 20, 1907. No. 85744.

### Subway Ventilation.

The Air of the New York Subway Prior to 1906. George A. Soper. Record of facts concerning the quality of the air of the subway before any change was made in the ventilating arrangements, with explanation of the conditions. Ills. 15000 w. *Tech Qr*—March, 1907. No. 84473 E.

The Ventilation of Tube Railways. Abstract of a paper by M. C. Birault, read before the Soc. des Ing. Civ. de France. On the Ventilation of Railway Tunnels and Underground Railways. Concludes that very active ventilation is necessary, giving suggestions for securing it. 900 w. *Engr, Lond*—March 8, 1907. No. 83122 A.

The Ventilation of Railway Tunnels and of City Subways (La Ventilation des Tunnels de Chemins de Fer et des Métropolitains Souterrains). M. C. Birault. An elaborate discussion of the subject with descriptions of methods employed in many European tunnels and subways. Ill. 55000 w. *Mem d l Soc d Ing Civ d France*—Jan., 1907. No. 83689 G.

The Ventilation and Cooling of the Simplon Tunnel (La Ventilation et la Réfrigération du Tunnel du Simplon). E. Mermier. The first part of the serial describes the methods used to ventilate other similarly-situated tunnels and the first projects for the Simplon. Ill. Serial. 1st part. 2400 w. *Bull Tech Suisse Rom*—April 10, 1907. No. 83673 D.

See also Tunnel Ventilation, under MECHANICAL ENGINEERING, HEATING AND COOLING.

### Surface Contact.

The Dolter Surface-Contact System. Illustrated description of the application of this system to tramways at Torquay, Mexborough and Hastings, in England. 3500 w. *Tram & Ry Wld*—March 7, 1907. No. 83191 B.

### Switzerland.

The Electric Railways and Tramways of Switzerland. W. A. Müller. Translated from *Elektrische Bahnen und Be-*



## STREET AND ELECTRIC RAILWAYS

### Switzerland

*triebe*. A summary gives particulars of each line, and then considers the results of operating the electric railways and their peculiarities. Map. 7800 w. Bul Int Ry Cong—Feb., 1907. No. 83292 E.

The Splügen Railway (Splügenbahn). Description of a new railway and tunnel in the Engadine, Switzerland. Illus. 2300 w. Schweizerische Bauzeitung—March 2, 1907. No. 83633 B.

The Splügen Railway. From *Schweizerische Bauzeitung*. Information in regard to this proposed line. 3900 w. Bul Int Ry Cong—Aug., 1907. No. 86852 E.

The Bodensee-Toggenburg Railroad (Die Bodensee-Toggenburgbahn). Illustrated description of this line under construction in Switzerland, giving plan and profile, an outline of the difficulties encountered, and description of some of the bridges, viaducts, stations, etc. 4500 w. Serial. 2 parts. Schweiz Bau—June 8 and 15, 1907. No. 85635 each D.

The Stubai Valley Railway (Die Stubaibahn). A description of this railway in the Alps, giving plan and profile, details of construction and operation, etc. Serial. 1st part. 2500 w. Eisenbahntechnische Zeitschr—May 22, 1907. No. 84949 D.

The Stubai Valley Railway (Die Stubaibahn). An illustrated description of this Alpine railway which was the first to use high-frequency alternating current. 1800 w. Serial. 1st part. Elektrotechniker—Aug. 25, 1907. No. 86962 D.

See also same title, under RAILWAY ENGINEERING, MISCELLANY.

### Systems.

A Comparison of Electric Railway Systems (Vergleich Elektrischer Bahnsysteme). H. M. Hobart. Compares the efficiency of direct-current and single-phase, alternating-current systems. Curves. 4400 w. Elektrotech u Maschinenbau—May 12, 1907. No. 84976 D.

Which Is the Best Electric Railroad System? C. L. de Mural. Editorial letter aiming to explain the differences between the three rival electric railroad systems. 3500 w. R R Gaz—Sept. 13, 1907. No. 87905.

High-Voltage Direct-Current and Alternating-Current Systems for Interurban Railways. W. J. Davis, Jr. Also discussion at Chicago. 4400 w. Pro Am Inst of Elec Engrs—Aug., 1907. No. 87148 D.

### Tacoma, Wash.

The Pacific Coast Traction Company, Tacoma, Washington. An illustrated account of a new line to American Lake from Tacoma, built mostly on private

right of way. 1000 w. St Ry Jour—Sept. 7, 1907. No. 86777.

### Terminals.

Contracts for the Use of Terminals. Gives examples showing the varied character of the terms under which interurban lines enter cities. 2500 w. St Ry Jour—Dec. 8, 1906. Serial. 1st part. No. 80902.

Proposed Down-Town Terminal of the Hudson River Tunnel System. Illustrations showing the exterior appearance of the buildings, and indicating the inside arrangement. The two office buildings which will be built on the terminal site on Church St. from Cortlandt to Fulton St. will be 22-stories high above the surface. 900 w. Ry Age—Dec. 14, 1906. No. 81043.

Central Tramway Terminus and Sidings at Liverpool. Plan and description of track-work in Liverpool at the principal terminus. 1500 w. Elec Engr, Lond—Dec. 14, 1906. No. 81239 A.

Market Street Terminal, Philadelphia. Illustrates and describes the arrangement of the buildings and tracks, and building details. 1500 w. Elec Ry Rev—Jan. 5, 1907. No. 81469.

An Experimental Test of a Railway Terminal System. A report of the test which was carried out at Coney Island, of the system invented by Neils Poulsen for operating the Brooklyn Bridge terminal. 2800 w. Eng News—May 9, 1907. No. 84297.

### Third Rail.

Third Rail Construction. E. Goolding. Calls attention to defects found in third-rail construction and to recent improvements in design. Ills. 1500 w. Elect'n, Lond—Jan. 11, 1907. No. 81738 A.

Third Rail Design, Composition and Resistance. E. Goolding. Discusses the drawbacks of the Vignoles or tee rails, and the advisability of using harder rails. 1200 w. Tram & Ry Wld—May 2, 1907. No. 84353 B.

Third Rail Design. E. Goolding. States the necessary requirements and gives illustrations of types in use with critical notes. 1300 w. Tram & Ry Wld—Sept. 5, 1907. No. 87053 B.

New York, Auburn and Lansing Railroad. A third-rail line for general freight business and passenger traffic, now under construction, is illustrated and described. 2800 w. Elec Ry Rev—July 13, 1907. No. 85562.

Proposed 1200-Volt Third-Rail Line in California. Particulars in regard to the

## STREET AND ELECTRIC RAILWAYS

### Three-Phase

California Midland Railroad which is to be operated with 1200-volt direct current, distributed by an under-running third rail. 800 w. Elec Ry Rev—May 4, 1907. No. 84204.

### Three-Phase.

Notes on Three-Phase Traction. Gerard B. Werner. Discusses the electrification problem in general, the structural features of the three-phase locomotive, speed control, etc. 4000 w. Sch of Mines Qr—April, 1907. No. 85021 D.

Notes on Three-Phase Traction. Gerard B. Werner. From a paper read before the Elec. Engng. Soc. of Columbia Univ. Explains structural features of the three-phase locomotive, speed control, and other matters of interest. 1800 w. Elec Rev, N Y—July 20, 1907. No. 85836.

See also Simplon and Single Phase, under STREET AND ELECTRIC RAILWAYS.

### Track Maintenance.

Wear and Maintenance of Street Railway Track. C. F. Wike. Abstract of a paper read before the Munic. & Co. Engrs. at Liverpool, Eng. Concerning the cost of repairs and renewals at Sheffield, Eng. 1700 w. Eng News—Aug. 29, 1907. No. 86635.

Notes on Tramway Wear and Maintenance. C. F. Wike. Read before the Incor. Assn. of Munic. & Co. Engrs. Gives particulars as to the Sheffield tramways. Ills. 2000 w. Tram & Ry Wld—July 4, 1907. No. 85853 B.

Care of Electric Railway Tracks. George L. Wilson. Read before the Am. St. & Int. Ry. Engng. Assn. Suggestions for the care of interurban and city tracks. 3000 w. Eng Rec—Oct. 19, 1907. No. 87788.

Some Notes on the Maintenance of Pier Tramways. H. Large. Directions for the proper care of equipment and tracks on lines at seaside towns, used only during the summer season. 2000 w. Elec Engr, Lond—Jan. 18, 1907. No. 81979 A.

### Track Reconstruction.

Track Reconstruction by the Chicago Electric Traction Lines. Illustrates and describes the three types of construction in the work already done, and the general characteristics of the work. 1200 w. Elec Ry Rev—Oct. 5, 1907. No. 87481.

The Rehabilitation of the Tracks of the Chicago Street Railway. An illustrated description of the general features of the work required by the city council. 3500 w. Eng Rec—Oct. 19, 1907. No. 87786.

Track Reconstruction in San Francis-

### Tracks

co. Illustrates and describes the standard track now being built, and some of the labor-saving methods that have been employed in the work. 1400 w. Elec Ry Rev—June 1, 1907. No. 84726.

### Tracks.

A Graphic Method of Determining Tie-Rod Spacing in Track Layouts. Claude W. L. Filkins. Gives a chart with directions for use and an explanation of the underlying principles. 800 w. St Ry Jour—June 1, 1907. No. 84686.

On Tramway Permanent-Way Construction. Alexander Paterson, Jr. Calls attention to details in respect to packing of rails, rail-joints, and paving. 3800 w. Inst of Civ Engrs—No. 3620. No. 80543 N.

Tramway Track Work. R. C. Bulough. Discusses important matters concerning present-day tramway track work. Ills. 2500 w. Mech Engr—Dec. 1, 1906. No. 80918 A.

Renewal of the Brooklyn Bridge Surface Tracks. Illustrates and describes some of the changes in construction aiming to provide a roadbed that will stand several years wear under the heavy traffic. 1000 w. Ry Age—Nov. 2, 1906. No. 80237.

The Track Department of the Detroit United Railways. An illustrated article describing the work of this department. 2800 w. St Ry Jour—Dec. 22, 1906. No. 81206.

Track Construction and Other Improvements of the Tri-City Railways. Illustrates and describes extensive improvements being made in the railway properties of Rock Island and Moline, Ill., and Davenport, Ia. 1500 w. St Ry Jour—Jan. 5, 1907. No. 81450.

Track Construction on Interurban Tramways. M. Dubs. The author reports on the results of inquiries made into the various methods in use for track construction on tramways. A large number of systems are described and discussed. Ills. 3000 w. Elect'n, Lond—Jan. 25, 1907. Serial. 1st part. No. 82144 A.

Specifications for Track Material Adopted by the German Street and Interurban Railway Association. Gives specifications showing the minimum qualifications that the association considers should be embodied in material. 1600 w. St Ry Jour—Jan. 5, 1907. No. 81452.

Concrete Stringers, Concrete Stringers with Ties, and Steel Ties. F. D. Jackson. Read before the N. Y. State St. Ry. Assn. Treats especially of concrete stringers

## STREET AND ELECTRIC RAILWAYS

### Tracks

with and without ties, and solid concrete in the track. Ills. 1200 w. Elec Ry Rev—Jan. 19, 1907. No. 81704.

Steel Tie and Concrete Construction on Utica and Mohawk Valley Railway System, Utica, N. Y. M. J. French. Illustrates and describes recent work, giving cost. 2500 w. St Ry Jour—Oct. 12, 1907. No. 87774.

Steel Ties in Germany. Dr. Ing. N. C. A. Haarmann. Reports the increasing use of steel ties, illustrating and describing the writer's "hook plate." 1200 w. R R Gaz—Sept. 29, 1907. No. 87915.

Track Construction in Paved Streets. I. E. Matthews. Read before the N. Y. State St. Ry. Assn. Deals principally with the types of construction used in Rochester, N. Y. 2000 w. Elec Ry Rev—Jan. 19, 1907. No. 81703.

Paving Between Street Railway Tracks and Rails. B. J. T. Jeup. Read at meeting of the Indiana Engng. Soc. Discusses the types of rails now used, giving arguments for and against them, and discusses the best pavement for city streets. Ills. 1700 w. St Ry Jour—Feb. 9, 1907. No. 82215.

Track Bonding. Thomas B. McMath. Read before the Cent. Elec. Ry. Assn. Brief notes on early methods of bonding, with a description of work in Indianapolis. Short discussion. 2500 w. Elec Ry Rev—March 30, 1907. No. 83363.

### Trail Cars.

The Successful Operation of Trail Cars in Denver. An illustrated description of the successful method of operation of trailers during the rush hours of traffic. 3000 w. Elec Ry Rev—May 4, 1907. No. 84203.

### Train Control.

A New Multiple Unit System of Train Control. Illustrated description of a new method in use on the Liverpool-Southport electric line. The main feature is the use of solenoid contractors with series, as distinct from shunt, magnets. 2000 w. Elect'n, Lond—April 19, 1907. Serial. 1st part. No. 83997 A.

### Train Testing.

How to Analyze Train Tests. Sidney W. Ashe. Gives a report prepared in connection with a series of tests made upon elevated cars, showing how speed-time curves may be analyzed. 1600 w. St Ry Jour—Dec. 1, 1906. No. 80772.

Improved Interurban Train Testing Apparatus. Sidney W. Ashe. An illustrated article describing improvements which greatly simplify the method of

### Turn-Table

making up results. 1200 w. St Ry Jour—Aug. 24, 1907. No. 86541.

### Trolley.

The Bow Trolley. Gerald Hooghwinckel. Refutes remarks by Eugen Eichel in an earlier article, and explains advantages of the bow. 1200 w. Elec Rev, Lond—June 7, 1907. No. 85101 A.

### Trucks.

Long Wheel-Base Trucks. R. L. Acland. Read before the Munic. Tram. Assn., at Manchester, Eng. Presents the merits of these trucks for street cars. Ills. 3000 w. Elec Engr, Lond—Sept. 27, 1907. No. 87512 A.

Practical Views on Trucks for Electric Motor Service. Franklyn M. Nicholl. Discusses the practicability of the principles of the M. C. B. truck in their application to electric service requirements. 800 w. Elec Ry Rev—Oct. 19, 1907. No. 87813.

### Trunk Lines.

Electric Trunk-Line Operation (Der Elektrische Vollbahnbetrieb). Ph. Pförr. Discusses principally the Prussian and Hessian State Railway. Ills. 7500 w. Glasers Ann—May 15, 1907. No. 84958 D.

Electric Trunk Line Operation on Lines with Heavy Grades (Elektrischer Betrieb auf Vollbahnstrecken mit Starken Steigungen). Herr Mühlmann. Discusses experiences on the mountain lines of the Württemberg State Railways. Ills. 3300 w. Glaser's Ann—June 15, 1907. No. 85667 D.

Electric Trunk Line Operation. Briefly considers the three electric systems proposed for the operation of trunk lines and the advantage of each. 2500 w. Elec Age—Aug., 1907. No. 86700.

Some Facts and Problems Bearing on Electric Trunk-Line Operation. Frank J. Sprague. Analyzes some phases of problems discussed by engineers, giving comparative facts, and developments in electric locomotive construction, and features of the equipments now commanding attention. Ills. 23000 w. Pro Am Inst of Elec Engrs—July, 1907. No. 86538 D.

Discussion on "Some Facts and Problems Bearing on Electric Trunk-Line Operation," at New York, May 21, 1907. Discussion of paper by Mr. Frank J. Sprague. 16000 w. Pro Am Inst of Elec Engrs—Aug., 1907. No. 87146 D.

### Turn-Table.

Single Ending Cars with a Novel Turn-Table as Recently Installed by the Public Service Corporation at Hoboken, N. J. Martin Schreiber. Illustrated detailed description of this table and its operation.

## STREET AND ELECTRIC RAILWAYS

### Vallvidrera

1000 w. St Ry Jour—March 23, 1907. No. 83235.

### Vallvidrera.

The Vallvidrera Cable Railway near Barcelona (Ferrocarril Funicular de Vallvidrera en Barcelona). José Playá. Illustrated description of cable railway 2300 feet long, and rising 535 feet. From the Revista Tecnológico Industrial. Serial. 1st part. 5000 w. Energia Electrica—Nov. 10, 1906. No. 80625 D.

### Vienna.

Electric Traction on the Vienna City Wiener Stadtbahn). Karl Rosa and Vladimir List. Well illustrated description of the Krizik system with direct current, two overhead conductors and rail neutral, which is being operated experimentally. 3 plates. Serial. 2 parts. 5000 w. Elektrotech u Maschinenbau—Nov. 4 and 11, 1906. No. 80573 each D.

Experimental Three-Wire System in Vienna. Illustrates and describes the equipment of the new car-sheds and system. 2200 w. St Ry Jour—Nov. 3, 1906. No. 80246.

The Electrical Equipment of the Vienna Metropolitan Railway. Describes the equipment. Ills. 1500 w. Elect'n, Lond—Jan. 4, 1907. No. 81641 A.

### Vienna-Baden.

The Rolling Stock of the Single-Phase Vienna-Baden Inter-Urban Line. Illustrates and describes the car equipment, giving full details of the controlling and braking systems. Adapted to use on both single-phase and direct-current circuits. 3000 w. Elect'n, Lond—Aug. 30, 1907. No. 86862 A.

### Waste Gases.

Waste Gases as a Source of Power for the Operation of Electric Railways. F. E. Junge. A study of the possibilities of utilizing the waste gas energy from iron smelting and coal mining industries for generating electric power. 4000 w. Cassier's Mag—April, 1907. No. 83331 B.

### West Ham.

West Ham Corporation Tramways. Illustrated description of the new offices and car depot, with notes on the permanent way and equipment. 4000 w. Tram & Ry Wld—Nov. 1, 1906. No. 80486 B.

West Ham Corporation Tramways. Illustrates and describes the design and equipment of a three-wire direct current offices, giving information also concerning the extent of these tramways and a

### Wires

few details of construction. 3500 w. Elec Engr, Lond—Oct. 26, 1906. No. 80300 A.

### West Shore R. R.

Electrical Operation on the West Shore Railroad. Illustrated account of the operation between Utica and Syracuse, N. Y. 5000 w. St Ry Jour—Oct. 12, 1907. No. 87777.

### Wheels.

The Diseases of Cast Iron Wheels. Considers diseases due to defective material, and to methods of manufacture. Ills. 3200 w. St Ry Jour—Nov. 3, 1906. No. 80248.

The Diseases of Steel Wheels. Shows that some of the troubles are very difficult to detect, but that they do not seriously menace the property equipped with such wheels. Ills. 2700 w. St Ry Jour—Nov. 24, 1906. No. 80579.

Car Wheels for Interurban and City Service. C. Skinner. Read before the Cent. Elec. Ry. Assn. Brief discussion of wheels for high-speed equipment weighing 40 tons or over per car. Short discussion. 1500 w. Elec Ry Rev—March 30, 1907. No. 83364.

### Winona.

The Winona Interurban Railway. Illustrated description of an especially well-built line in the northern part of Indiana. Elec Ry Rev—Nov., 1906. No. 80423.

### Wires.

Some Notes on the Breaking of Trolley Wires. P. S. Sheardown. Read before the Dublin Sec. of the Inst. of Elec. Engrs. Discusses the causes, showing that the size of wire is not of importance. Proposes the anchoring of the trolley wire at each suspension, and suggests a simple means of doing this. 2000 w. Elect'n, Lond—Jan. 11, 1907. No. 81739 A.

Experimental Determinations of Physical Properties for the Calculation of Alternating-Current Railway Conductors (Experimentelle Bestimmungen der für die Berechnung von Wechselstrombahn-Leiteranlagen Masgebenden Physikalischen Gröszen). Leo Lichtenstein. Enumerates the tests that should be made and describes the experiments and results obtained on the Marienfelde-Zossen Railway. Ills. 12500 w. Serial. 2 parts. Elektrotech Zeitschr—June 20 and 27, 1907. No. 85687 each D.

A New Form of Suspension for Con-

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### Wires

tact Wires. Discusses the strains in the contact wire and their effect, and illustrates and describes a new design for a suspender. 3300 w. R R Gaz—March 1, 1907. No. 82681.

The Supporting of the Trolley Wires

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on Alternating Current Lines (Aanleg en Constructie van den Werkdraad voor Wisselstroombanen). C. Feldmann. Illustrated description of various methods. 2000 w. De Ingenieur—April 27, 1907. No. 84188 D.



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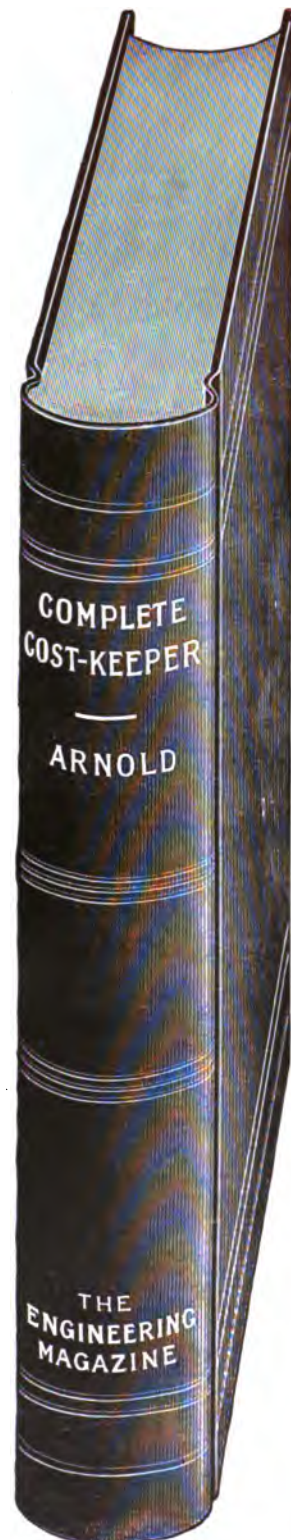
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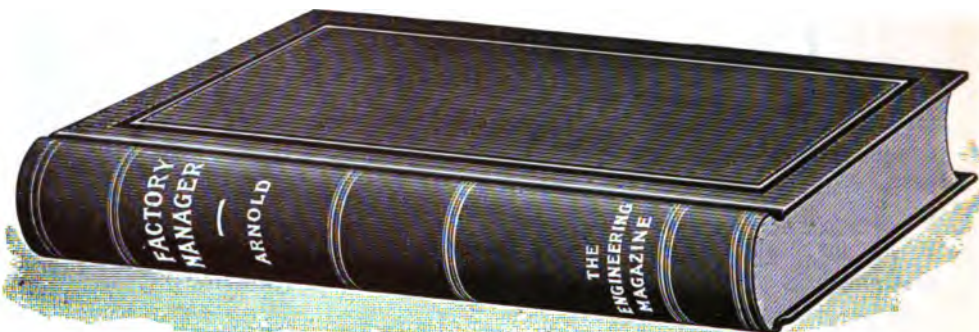
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